

TECHNOLOGY DEPT

American Aviation

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The Independent Voice of American Aeronautics

OCTOBER 15, 1943

Men or Airplanes

Fortnightly Review

EIGHTEEN months ago it was a material shortage. Today it is manpower shortage. Not every center of aircraft production is acutely harrassed by a shortage of workers, but the west coast is suffering abnormally. If future production schedules are to be met, industry must be assured of a more stable and a more numerous labor supply.

Crux of the problem is in Southern California where various efforts are being made through the Aircraft War Production Council to impress upon national officials the seriousness of the shortage. A monthly turnover of 19,000 persons is not healthy. When 19,100 workers must be hired to bring about a net gain of 100 workers, the aircraft industry cannot be expected to expand the output of assembly lines. The problem is no longer one that can be handled by management—it is a community and a national problem that calls for action. Where 30,000 to 40,000 additional workers are to come from to meet production schedules this winter is the outstanding question in Southern California.

What accounts for the huge turnover? Management has endeavored to find out, but the results are not too enlightening. Out of every 100 workers quitting jobs there are almost 100 diverse answers. As to whether the answers given are the actual reasons for quitting is difficult to determine but it seems plain that the workers of Southern California have not been sufficiently impressed with the war emergency to persuade them to remain on the job. Management has exhausted every trick in the bag to keep their workers. What remains to be done is a national man-

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Deals With U. S. Group

Lowell Yerex, founder and guiding genius of the widespread TACA system of air routes in Central and South America, has sold \$2,225,000 worth of stock to U. S. interests, headed by TWA. He will remain as head of the "Americanized" company.

Late Bulletins

New Lea Bill

A new Lea bill, similar to the last committee print, was introduced in the House Oct. 12 and ordered reported out by Interstate and Foreign Commerce Committee. Major difference in the new bill is omission of sec. 408, reaffirming existing law barring surface carriers from the airline field. Rep. Bulwinkle introduced this section as a separate bill.

Wynne Resigns MCA Post

John S. Wynne, Washington aviation attorney, has announced his resignation as director and general counsel of Mid-Continent Airlines and severance of all relations with the company.

10-Hour Shifts: Possibility that all aircraft plants in the critical labor areas may be asked to adopt two 10-hour shifts per day instead of the present three-shift basis to obtain better utilization of manpower is regarded in Washington circles as likely to materialize within a short time. WPB's Aircraft Production Board is reported to be strongly in favor

of such a plan. Boeing is now completing arrangements to put the 10-hour shift plan into operation at its Seattle plants. In this connection, production of Flying Fortresses is reported to be up 12%, the best gain recorded by any manufacturer in recent weeks. T. P. Wright, director of Aircraft Resources Control Office, is reported to have advised the industry that the greatest immediate gains in manpower utilization can be effected by general adoption of two 10-hour shifts. While establishment of such a plan would have to take into consideration the peculiar problems of individual plants, it is regarded as likely that it will be pushed on an area-wide basis. Chief problems now worrying Washington officials are turnover, labor utilization, classification of new employees, community action and general morale. Navy's Bureau of Aeronautics on Oct. 1 began a production drive in which it is sought to enlist workers' enthusiasm for greater production by carrying an appeal to them through labor-management meetings and missionary work by key personnel. Navy also proposes to post in each factory the individual airplane schedule, in numbers, with a chart revised day-by-day showing the relation of production to schedule. Discussion is underway as to adoption of a similar plan by the Army.

Production: The first two weeks of October brought an encouraging rise in aircraft production, brightening the outlook after September failed to better the previous month's record. Meanwhile, Undersecretary of War Patterson revealed that German plane losses have exceeded her production since July. Reports from the Southwest Pacific said the Japanese apparently have developed better fighter planes and better pilots, but that U. S. planes are able to cope with them successfully.

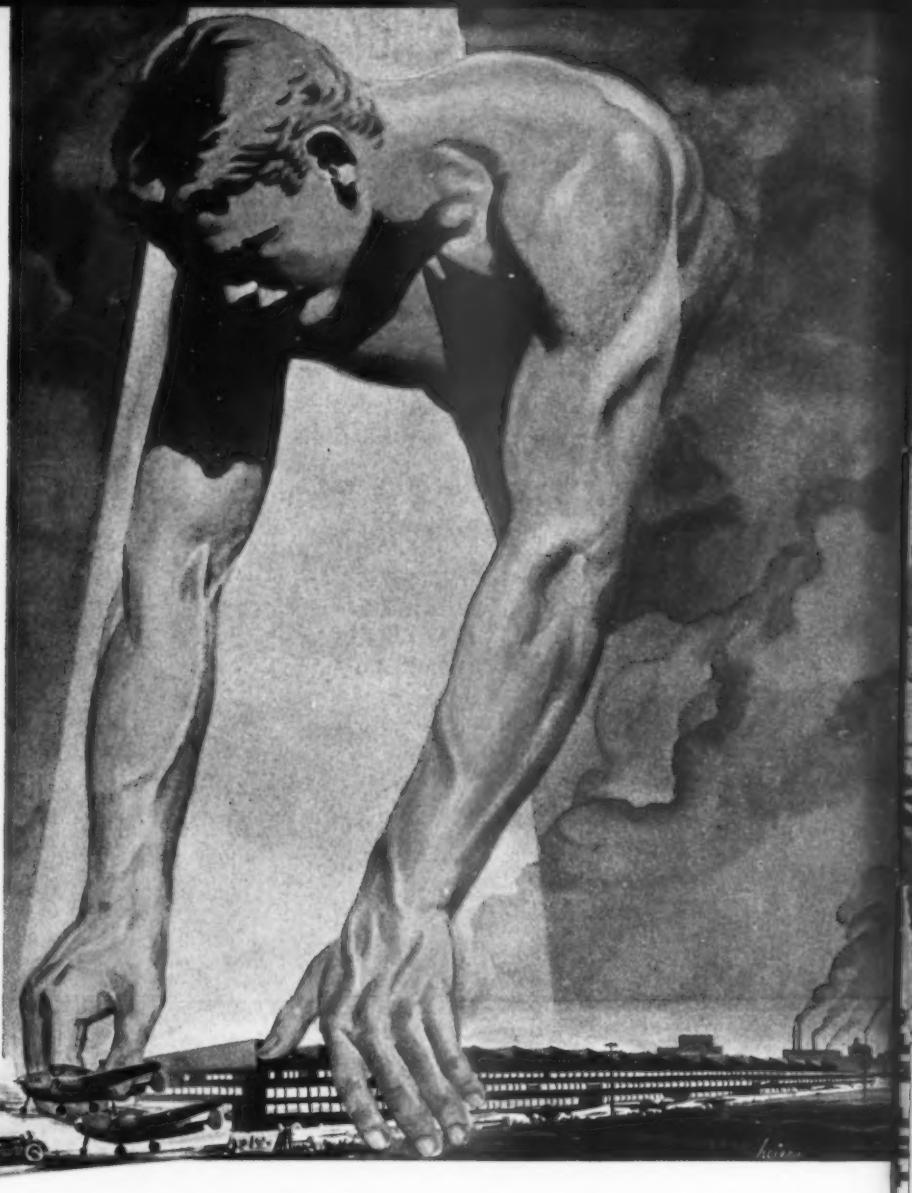
Empire Talks: The long-awaited conference of British government officials with avia-

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*Trend of
The News*

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MULTUM IN PARVO



The old Latin phrase, *multum in parvo*—"much in little", has attained a significance in World War II far beyond its original meaning. This is particularly true in the aircraft industry, where little things, inventions and developments perhaps small in themselves, have contributed much to Victory—through speeding and multiplying production.

For example, at McDonnell, we use a *vari-angle** attachment to a sander, which saves as much as a third of the total manufacturing time on form blocks—plus largely eliminating danger of deviations.

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WAYNE W. PARRISH, EDITOR AND PUBLISHER
ERIC BRAMLEY, EXECUTIVE EDITOR
THOMAS E. LINDSEY, BUSINESS MANAGER

DEPARTMENT EDITORS: Katherine E. Johnsen (Congress); Conrad Campbell (Manufacturing); E. J. Foley (Equipment); Peggy Guetter (West Coast); Clifford Guest (Special Assignments); Barbara B. C. McNamee (War Agencies); William Thompson (Production Editor and Staff Photographer); Gerard B. Dobben (Transport).

REGIONAL REPRESENTATIVES:

Miss Peggy Guetter, West Coast Representative, Room 1404, Park Central Bldg., 412 West Sixth St., Los Angeles, Cal. Telephone: Vandike 2680.
Harry Brown, Midwestern Advertising Manager, 522 Briar Place, Chicago, Ill. Telephone: Lakeview 6704.
O. R. Elofson, Eastern Advertising Manager, 2207 RKO Bldg., 1270 Sixth Avenue, New York, N. Y. Telephone: Circle 6-9446.
J. Forecast, British Representative, Edwin Greenwood Ltd., Strand, W.C.2, Thonet House, London, England.
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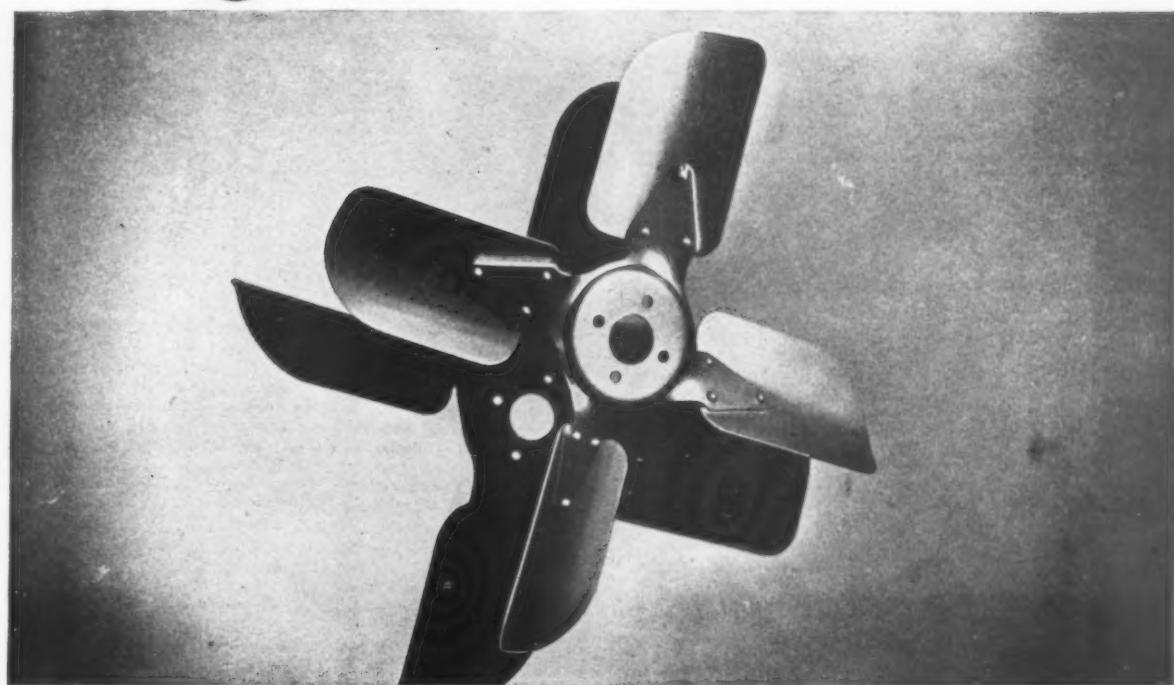
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(Continued from page 1)



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tion leaders of its commonwealths and dominions was scheduled to get under way in London on Oct. 11 "to consider the future of civil air transport." Described as informal and exploratory, it was expected to raise many important questions which the British will have to settle before they are in a position to talk turkey with the United States and other allied nations on post-war. For one thing, there is every indication that the commonwealths have no intention of subjugating their own self-interests in the aviation picture to those of Britain. Answering inquiries on the diversity of British opinion regarding the "chosen instrument" monopoly ideas, Sir Archibald Sinclair, Secretary for Air, said recently: "Certain communications have been made to certain governments of the Empire and we are awaiting their answers. Pending receipt of their answers, I cannot make a further statement." That is a typically British admission that a lot remains to be done in evolving a policy, but it is clear that the British rank their air future in the highest top notch of their postwar problems. Lord Beaverbrook, recently appointed Lord Privy Seal by Prime Minister Churchill, is taking over the reins of civil aviation planning and handled the agenda for the Commonwealth conference.

Surface Carriers: John C. Cooper, vice president of Pan American Airways System, has issued a strong blast against an international air transport policy approved by the board of the United States Chamber of Commerce and sent this week to its membership for approval. Among other things the U. S. Chamber advocated in effect legislation approving entry of steamship companies into air transport. Cooper said that while they were members of the Chamber's general committee, neither he nor W. A. Patterson, president of United Air Lines, nor Ralph Damon, vice president and general manager of American Airlines, were members of the Aviation Subcommittee preparing the report. Only air transport members permitted on the subcommittee, he charged, were John E. Slater, executive vice president of American Export Airlines, and S. J. Solomon, president of Northeast Airlines—"officers of the only two American flag airlines found by the CAB to be controlled by surface carriers." Cooper urged the Chamber "to advise the membership that the air transport resolution is in fundamental conflict with the views of the air transport industry." A copy of his letter was included in the report to the membership.

Competition: Recognizing fully the advantages of speed offered by air transportation, the railroads are giving evidence of strong efforts which will be made to meet passenger competition after the war by advancing such factors as cost, comfort, safety and service. George A. Kelly, vice president of the Pullman Co., in a recent speech declared that provision of sleeping facilities at greatly reduced cost may soon be effected by the company's two types of new cars in experimental service. One, the coach-sleeper, is designed to provide sleeping facilities at greatly reduced cost. The other provides private single-bed, air-conditioned rooms at a cost little above that for the conventional lower berth.

Looking Southward: Another organization—the Institute of Inter-American Transportation to serve as a medium of cooperation with the other American republics in transportation matters—has been set up under the Office of Coordinator of Inter-American Affairs. President of this institute is Maj. Gen. Julian L. Schley, former chief of engineers of the U. S. Army and Governor of the Panama Canal Zone—a highly regarded engineer, but a man who has no aviation background. Spokesmen, however, say the institute will give full recognition to air transport in its operations.

BOAC Applies: Mayer F. H. LaGuardia has revealed that British Overseas Airways has announced its interest in obtaining privileges at New York's new Idlewild Airport, along with several of the major U. S. airlines.

Vital Area: TWA's purchase of an interest in TACA and United Air Lines' control of LAMSA indicate the importance of Central and South America in the future airline picture. One thought being expressed is that Europe may be in such an unsettled state for an indefinite period following the war that Central and South America will offer the best bet for some time to come.

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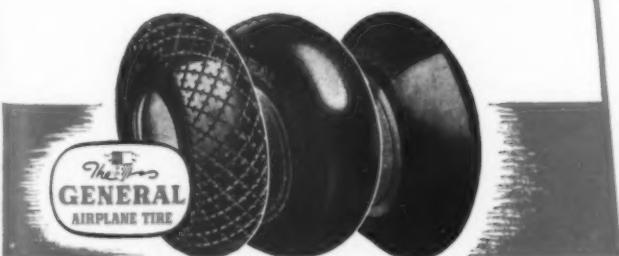
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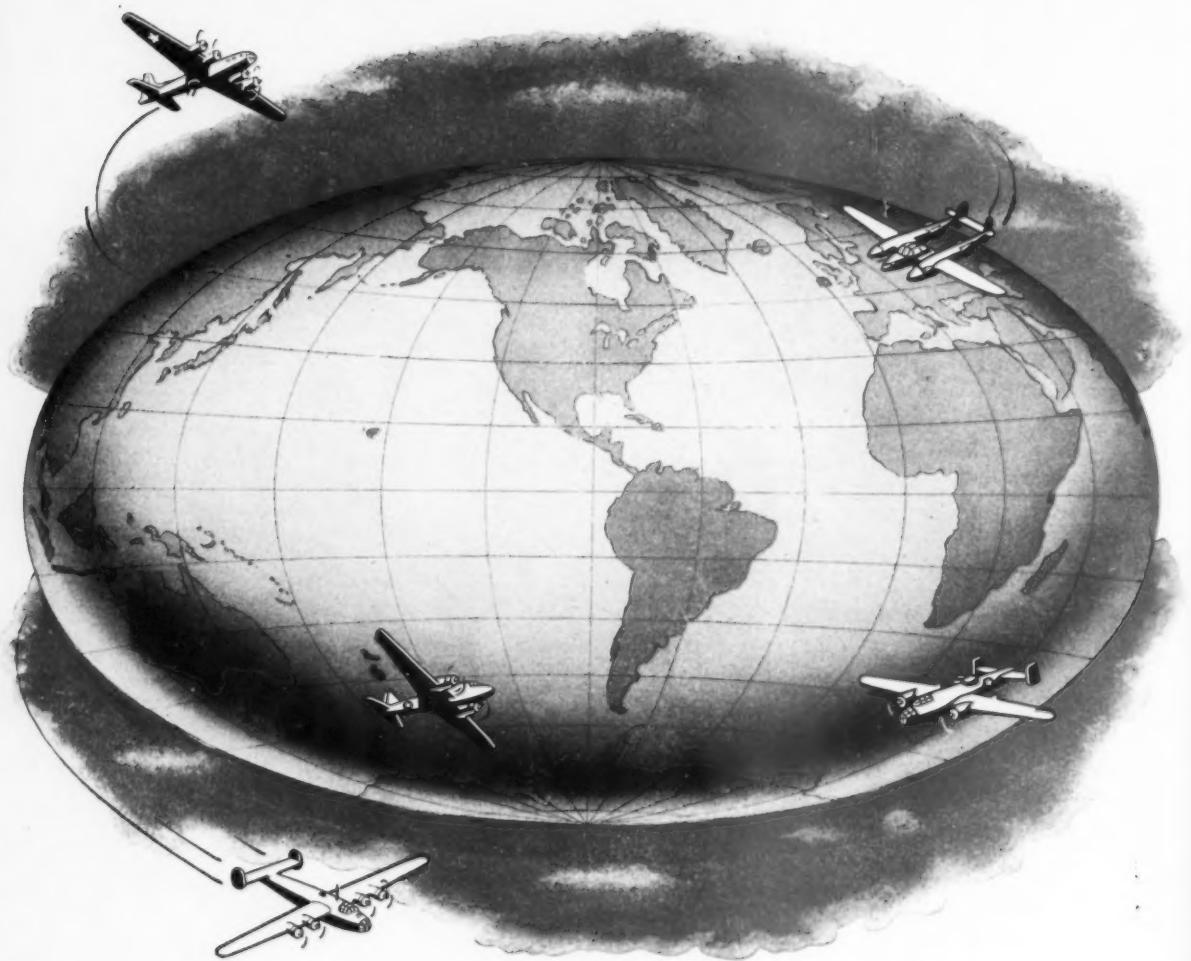
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Editorial

(Continued from page 1)

power directive with teeth in it—something just short of a national labor act.

More community support is needed. In Los Angeles the racing promoters are endeavoring to re-open horse racing. If they are successful, absenteeism in war plants is bound to increase. Yet one or more government agencies in Washington are inclined to say to the promoters, "Go ahead as long as racing does not interfere with war activity or violate any transportation regulations." But to assume that there can be horse racing without interfering with the war effort is ridiculous evasion of reality. It is too easy *not* to work today in Southern California. There is no need to make it even easier to stay away from a job.

As we have said before in these pages, if Washington wants airplanes it must give industry the tools with which to build them. Manpower is the one tool most needed now. There are signs that Washington is beginning to realize the seriousness of the manpower shortage, as witness the various plans now being developed and the pay increase at Seattle which had immediate good results. In the meantime Washington should protect the industry from unfounded charges of manpower hoarding, a charge that merely breeds suspicion and hinders the war effort.

Shocking Neglect

MR. WELCH POGUE'S Boston speech was both shocking and enlightening. It was shocking to learn that 10,000,000 air mail letters weekly were delayed in June because of a shortage of transport airplanes. It was enlightening to learn that the airlines are now carrying one-third of all non-local mail. Advocates of "all first class mail by air" are nearer a realization of their goal than they probably believed possible at this time. It is certainly evident that the public wants air mail—it wants faster delivery of mail.

If those officials responsible for rapid delivery of mail and express had been on their toes at the beginning of the war, a very simple system could have been inaugurated to expedite transcontinental deliveries. It is a system only necessary because of the fewer cross-country schedules of the airlines. Every night out of New York one airplane loaded with mail and express should have departed for the west coast with one stop at Washington. From there on the pilot should have had the choice to fly on any airway he desired, such choice dictated by weather and flying conditions. Only refueling stops would be made across the country, the sole destination being either Los Angeles or San Francisco. Such a system would have relieved regular airline schedules out of New York of a sizeable load. Five tons of mail and express destined solely for the west coast could have been hastened on its way with almost no chance of weather delays because of the flexibility of flying routes.

The biggest air mail and air express delays pertain to the west coast. In normal times there are adequate schedules commercially, hence a transcontinental special would not be necessary. As a war-time emergency such a schedule could be justified and would

require very few planes and few crews. It is not too late to institute such a schedule. It is a job the Air Transport Command might well have undertaken as a war-time service to relieve the long-range bottlenecks.

Mr. Pogue's revelations, as printed in our last issue, tell a sorry story of transportation breakdown. They tell a sorry story of lack of coordination between the Army and the civilian industry. At a time when transports are rolling off the lines, and at a time when stories continue to pop up of the abuse and mis-use of transport planes by various units of the Army (very largely outside of the ATC), it is a discredit to the nation's war production program to have vital communications and express delayed many days enroute from one coast to the other.

There is still much that can be done. It is not too late, although airlines have lost crews in the interim. More airplanes for the airlines is one answer—and a tightening up of Army transportation is another. Granting of priorities to Army men on furlough is a gross mistake, even though the men on furlough should have rapid transport to their homes. The Army should expand its own transport for its own men, and permit industry to make use of the rapid transportation system which it needs so badly.

Service to Flyers

A CHALLENGE is being made today to all those who are concerned with private flying after the war. It is a challenge for a national service organization comparable to the American Automobile Association to act in the interest of the private flyer. It is a job that belongs primarily to aviation and no time should be lost in laying the groundwork for such a service organization right now. Already the various automobile associations are looking with eager interest to the private flying field. But the job really belongs within aviation.

Perhaps this is a challenge, first of all, to the National Aeronautic Association. Perhaps this is where NAA can find a permanent usefulness after shifting vaguely and rather ineffectively from one field of activity to another over a period of twenty years. Certainly of all of the potential activities for NAA, the private flying field is the most tangible. It is the field offering the greatest possibilities for service, usefulness, and expansion. But before NAA can embark on a concrete tangible program it must be equipped with a business organization and a business outlook comparable to that which has made the AAA in the automobile field such a success.

In the past we have had the Sportsmen Pilots Association which was a fine but exclusive organization stressing the recreational aspects of private flying. We have had the Private Flyers' Association, suspended for the duration, which plugged consistently and at times effectively for legislation and other benefits for private flying. Later came the Aircraft Owners and Pilots Association which was the first real effort at a servicing organization and which is still functioning as best possible during the war.

(Turn to page 12)



"TAMING THE WILD"



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and Jacobs-powered planes carried in much of the equipment and supplies for its construction.

Today, military needs swallow all aircraft production, and Jacobs' output, multiplied many times, is powering the majority of the Bomber Pilot Trainers of the huge U. S. Army Air Forces' training program and Canada's Commonwealth Air Training Plan. After Victory is won, however, airplanes will make the rich resources of the Northwest available for the civilized progress of the World, and Jacobs Engines, with new efficiency and new economy, will be ready to blaze the way.



21 NAMES YOU'RE GOING TO KNOW BETTER

HERE are the names of twenty-one different Airlines of the United States. Most people are familiar with four or five, but few have traveled on all twenty-one. The day is swiftly approaching, however, when the names and routes of all of them will be known firsthand by millions. Here is why:

Improved transportation of any kind creates more travel than existed before. Air transportation speeds this process by granting to millions the time for wider and more frequent travel. Further, the Airlines of the United States comprise a network of neighborly streets permitting more people to go more places with more ease and convenience than ever before in history. And because America is the travelingest nation in the world anyway—they'll be going!

The war has momentarily delayed the expansion of air travel. But the domestic and world-wide operating experience which the Airlines of the United States are concentrating into these few war years has already set the air transport clock ahead a quarter of a century.

Yes, America will take to the air in ever increasing millions when this war is over. The urge will be there—and so will these twenty-one Airlines, grown vastly in stature and proficiency by their service to the armed forces and wartime industry of the nation.

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Books

BOOT STRAPS, by Tom M. Girdler, in collaboration with Boyden Sparks. 471 pp. Charles Scribner's Sons, New York. \$3.00.

This autobiography of an American industrial tycoon, who is comparatively new to aviation, summarizes postwar opportunities for American business. Girdler, who is chairman of Consolidated Vultee Aircraft Corp. and Republic Steel Corp., predicts that after the war every town and village in the United States will have an airmail pick-up service. He foresees a growth of airplane feeder lines and mail lines and increased development of airports.

The industrialist refers to himself as a "steel man . . . much aware of realities."

"I have no illusions that the airplane will make the railroads obsolete," he writes. "There are not many people in this country who could afford to ride in an automobile made of steel which in turn had been made from ore hauled to the blast furnaces from the Mesabi Range or Port Henry, N. Y., by airplane. For such haulage even railroad transportation is too costly. So any suggestions that bulk freight is to be transported by air, even in trains of gliders, is sheer nonsense and will be for many years."

Girdler believes, however, that in the development of air routes after the war there will be a swifter appearance of a "tremendously ramified growth of feeder lines and mail lines" than happened in the development of railroads.

A preview of mock-ups of gigantic airplanes has convinced him, he says, that in the future "only foolish men" would dare build luxury liners, such as the Normandie or Queen Mary, but will build planes instead.

SMOKE STREAMS, by C. Townsend Ludington. 144 pp. Illustrated. Coward-McCann, Inc., New York. \$2.75.

The author has had a distinguished career in aviation and with this book has made another important contribution. Accompanied by many diagrams and photographs, the book explains in non-technical language what causes lift, drag, downwash and stalls. In a preface Mr. Edward P. Warner, now a member of the Civil Aeronautics Board, says the visualization of air-flow has been a useful tool to students of aeronautics from the earliest days, and praises the work of Mr. Ludington and his associates at the Griswold Smoke Tunnel for raising the application of smokestreams to aeronautical education to a new level. The author is now associate director in charge of aviation of the Franklin Institute in Philadelphia.

TRANSPORT FOR WAR, by Edward Hungerford. E. P. Dutton & Co., New York. 272 pp. \$3.00.

From his home at Pittsford, N. Y., where train and truck, boat and plane pass in daily review, Edward Hungerford, newspaper editor, author and a former railroad official, has written a moving narrative of transportation progress in the United States, with particular emphasis on the part American transportation is playing in winning World War II.

While it is evident that the author, both through choice and circumstance, has made a hobby as well as somewhat of a vocation of railroading, the reader will find in this book an honest, fair evaluation of the part that each type of transportation has in carrying men and munitions to the far flung battle fronts. Hungerford does not write as a critic. He sets himself to the task of delivering a eulogy to the pioneers and leaders in the transportation industry. Only when he speaks of government bungling of railroad management in World War I does he become critical. And when he tells the story of the railroad's comeback early in the present decade, he waxes enthusiastic, almost patronizingly so.

Hungerford pays a rich tribute to air trans-

portation in the closing chapters of the book. He goes back to Orville Wright and Kitty Hawk, weaves in the tragic experience of Samuel Pierrepont Langley, moves on to the more heartening success of Glenn Curtiss and in chronological order sets down the big names that have helped to make aviation what it is today. He makes no extravagant predictions for the future of aviation but a reading of his comment on air transportation brings the reader to the conclusion that he feels this lusty infant of the transportation quartet is headed for great things in the days to come.

—G. B. D.

FROM THE GROUND UP, by Corey Ford and Alastair MacBain. 198 pp. Charles Scribner's Sons, New York. \$2.50.

Two nationally-known magazine writers have told the intimate, humorous, personal story of how an Army flyer is made. To gather material they made a six months' tour of AAF training centers. With the aid of illustrations, and of four original water-colors by Lt. John J. McCoy, Jr., A.C., they have brought out an unusually colorful book, much more readable than the majority of books on flight training. Their story begins with the shedding of civilian clothes by an Army cadet to the final day when he pilots a Flying Fortress across the ocean. All royalties from the sale of this book are being contributed to the AAF Aid Society, Inc. The authors had the full cooperation of the AAF in the book's preparation.

FLYING MEN AND MEDICINE, by E. Osmun Barr, M.D. 254 pp. Funk and Wagnalls Co., New York. \$2.50.

Dr. Barr has written a highly intelligent and interesting book on medicine for the prospective flyer and for the mothers and fathers of men who fly. It is in non-technical language. Medical terms are used as infrequently as possible. The effects of flying are explained in language which can be understood by all who read the book. In essence, it is the story of the forces at work on the body when you travel through the air at great speed or when you go high above the ordinary atmospheric conditions of life on the ground. There is an introduction by Col. James H. Deford, of the Chemical Warfare Service, and a foreword by Lieut. Col. Bernard L. Jarman, Medical Corps, and former president of the Aviation Medical Association.

Scranton, Pa.

To the Editor:

The untimely death of R. C. du Pont was indeed regrettable, and we feel that your article in the October issue of your magazine is a fitting tribute to him.

The writer was somewhat perturbed to note that American Aviation followed the newspaper accounts in making the statement that Mr. du Pont's parachute "failed to open." Through a mutual friend of Mr. du Pont, I learned that he was unable to leave the glider in sufficient time to allow the parachute to open. According to eye witness accounts, Mr. du Pont was the last to leave the glider, and did not get out until the glider was 50 feet above the ground. Naturally, it is impossible for the parachute to open at such a low altitude although many lives have been saved in jumps from 100 feet.

The speed of the jumper through the air as well as altitude are two factors governing the opening time of the parachute. The greater the air speed, the faster the opening. As gliders are relatively slow in speed, jumping from a glider at 50 feet could not be expected to be successful.

The writer has personally witnessed the drop testing of over 10,000 parachutes and has yet to see a parachute fail to open.

It is true that in the past parachutes have failed to open when used by so-called "professional" jumpers who have used the equipment beyond the reasonable expectancy of service. Many jumpers alter parachutes experimentally, contrary to regulations and thus meet grief.

It has long been the contention of this writer and other parachute people, that newspapers and periodicals should give more thought to the phrase "parachute fails to open," as this has a negative affect on the average person regarding the safety of parachutes, and definitely encourages our flyers in the Service to stay with their ships rather than "take a chance with a parachute."

Parachutes have definitely proven their reliability and the writer feels that from now

(Turn to page 13)

Editorial

(Continued from page 9)

But private flying will expand greatly in the ten years following the war. A strong national organization is called for. If the National Aeronautic Association does not step in now to draw together all of the scattered interests of private aviation, then another organization will step up to bat to do the job. We would like to see NAA given the chance to weld all of private aviation's groups and activities into one unit fully representative of the individual pilot and plane owner and supported by a solid business organization built for service. Manufacturers of personal airplanes will welcome an opportunity to throw their support to a worthy organization. It is NAA's one chance to step up and accept the challenge.

What does the postwar private flyer need? First of all he needs an organization not afraid to go to bat for simplified regulations. He needs a group willing to fight for adequate landing fields, for low gasoline charges, for low insurance rates, and for a hundred-odd flying aids. He needs a sponsor nationally, someone who will speak for him and in his behalf. Without adequate national representation, the private flyer will be as hamstrung by senseless regulations and red tape as those which have held down private flying in the past. The way is open for action.

WAYNE W. PARRISH

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Nightwatchman on Duty

American boys are sleeping down there on that tiny dot of land set in the endless nothingness of the Pacific.

They can sleep because they've got a nightwatchman on duty up here patrolling the skies. A fighter pilot of the Army Air Forces flying an Army Bell Airacobra, he's an alert, a deadly efficient nightwatchman.

His plane gives him visibility unsurpassed by any single engine fighter in the world. His plane has blinding speed, modern instruments for night flying and a two-way radio. At his fingertips are

controls for a cannon and a battery of machine guns.

He can find the enemy, sound an alarm—then deal smashing blows. Rest easy, down there below...the nightwatchman is on duty.

WHEN it's over, over there, American aircraft will have new duties in peaceful travel and commerce. In designing and building the first Airacobra...in constantly improving it...we've learned plenty about making planes simpler, safer, more fool proof and trouble free. You'll see what we mean. © Bell Aircraft Corporation, Buffalo and Niagara Falls, New York.

BELL Aircraft
AIRACOBRA for victory—future planes for peace

CURTISS-WRIGHT

40,000

30,000

SUPREMACY *in the Stratosphere*

Aviation's sights today are trained on the stratosphere, the key to military and world trade supremacy.

But before science can conquer the rarefied, sub-zero heights of the earth's ocean of air, answers must be found to a multitude of problems, for planes and men will be entering a sphere considerably beyond today's limits of flight.

To speed this epic exploration, Curtiss-Wright has completed the world's largest altitude chamber—where, without leaving the ground, airplane cabins and fuselages with all their complex equipment can be tested exhaustively under stratospheric conditions. It is, we believe, a contribution of far-reaching importance to America's leadership in aviation.

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Corporation
AIRPLANE DIVISION

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Member: Aircraft War Production Council, East Coast, Inc.

Nine minutes after this scientist steps into the Curtiss altitude chamber he can reach flying conditions equivalent to those found nearly eight miles above the earth's surface in rarefied air 70 degrees F. below zero.

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Letters

(Continued from page 12)

on, newspapers and periodicals should not cover up poor reporting by putting the blame on parachutes.

In view of the obvious future increase in civilian flying, where parachutes should play a major role in building up the safety record of aviation, the writer feels that it would be in order for American Aviation to further investigate this point and print a correction to offset the incorrect statement in your article.

Very truly yours,
A. T. STRETCH, Supt.,
Victory Parachutes, Inc.

(Reports to American Aviation were that du Pont left the glider too close to the ground to allow his parachute to open. Mr. Stretch rightfully takes issue with the phrase "failed to open," which can have a double meaning—i.e., failed to open because something was wrong with the chute, or failed to open because of insufficient altitude. Ed. Note)

Franklin, Pa.

To the Editor:

Your editorial on "simplicity and utility" in airplanes was certainly a practical and down-to-earth view.

Let us not, however, become entangled in the spiderweb of "simplicity". We could make automobiles more simple by eliminating the transmission and we could make auto trucks and busses "more simple" by eliminating the "expensive" multi-shift transmissions. But that "expensive" transmission gear shift is precisely what makes possible the great economy and usefulness. In airplanes it will have to be variable lift and plenty of it.

The cost of any article is not especially a matter of its simplicity, it is rather a matter of its usefulness and the source of supply properly balanced in accordance with demand. The modern automobile of low price would cost five to ten thousand dollars if made on the philosophy of the present small airplane.

Some are trying to make the airport create the need for airplanes. That will of course have a bearing on airplane sales and demand but the airplane must be so useful as to demand the airport just as the auto demanded the hard road.

High speed does not necessarily mean high operational cost IF we want to weave the airplane service into our daily lives and business. Large variable lift and small airplane engines (similar to the philosophy of the modern auto truck) will give surprising high speeds—economically. If we use the imagination that God gave us to use.

Sincerely,
GORDON B. JACKSON.

St. Paul, Minn.

To the Editor:

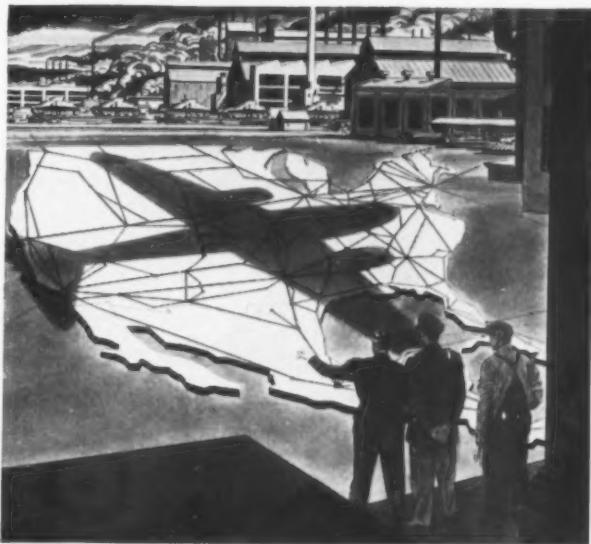
I note with interest the efforts to find a suitable name for the impending development of aviation short lines.

To my way of thinking, the difficulty is not so much the need for a name as it is an improper application of the phrase that has been used initially to describe an operation in which cargo and mail is dropped and picked up on the fly. For this type of operation, the phrase "feeder and pick up" service is quite adequate.

It would be exceedingly unfortunate to tag the newly developing short lines with a name which they may never live down and which may relegate them forever to the minor league class in the public mind. Why not call them what they are, namely, connecting services? If it is absolutely necessary to distinguish between them, it can be adequately done by calling them connecting through or local services, or connecting main line and short line or interurban services.

Sincerely yours,
L. L. SCHROEDER
Commissioner, Minnesota
Dept. of Aeronautics
310 Globe Building
St. Paul, Minnesota

Get it Fast...specify AIR EXPRESS



If you want your orders shipped *fastest way*, be sure to specify "ship AIR EXPRESS"—because general instructions such as "urgent" and "rush" may be misinterpreted by the shipper.

And it's especially important to specify AIR EXPRESS if your shipment is vital to a war job, because it saves something like 75% of the hours and days consumed over the next fastest means of shipping. This 3-mile-a-minute service is available direct to more than 350 U.S. cities and to scores of foreign countries.

AIR EXPRESS RATES REDUCED

As a result of the great volume of Air Express traffic created by wartime demands and the increased efficiency developed to satisfy these demands ...Air Express rates within the United States have been substantially reduced, in some instances as much as 12½%, depending on the weight of the shipment and the distance it moves. Consequently, shippers nationwide are now saving an average of 10½% on air cargo costs.

NOTE TO SHIPPERS: *Ship Early*—as soon as shipment is ready—to assure fastest delivery. *Pack Compactly*—to conserve valuable space.

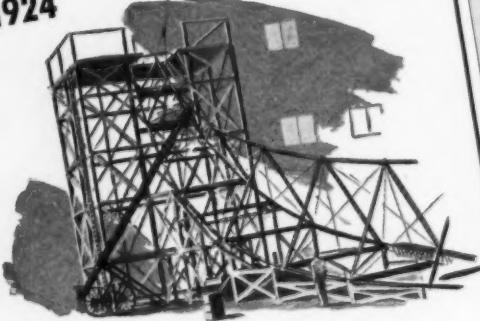
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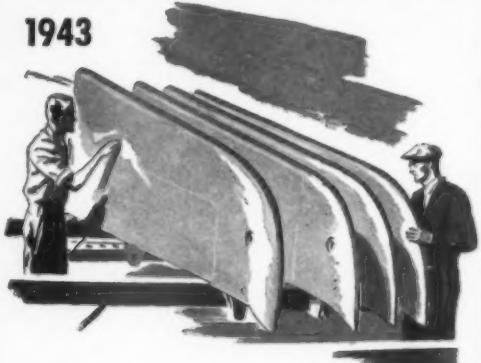
Trail Blazing in the Skies

1924



THE FIRST USE OF DURALUMIN IN AIRCRAFT—by a private American manufacturer—was in the keel of the Army semi-rigid airship RS-1, built by Goodyear in 1924. So little was then known of the technique of working duralumin, Goodyear engineers spent a year developing methods of forming, heat-treating and riveting the metal—before beginning work on this keel. Many of these practices first pioneered by Goodyear are now standard in duralumin aircraft construction.

1943



"KNOW-HOW" IN AIRCRAFT

METAL WORKING IS THE SECRET

of Goodyear's ability to serve airplane manufacturers today in the design (or redesign) and manufacture of all types of parts and subassemblies. Now Goodyear is producing wings, floats and control surfaces for all types of warplanes from hot fighters to the toughest bombers. And in addition Goodyear, along with other companies, is building for the Navy the speedy Vought-designed "Corsair"—the agile fighter that is literally flying circles around the tricky Zero.

How Goodyear Aircraft Corporation Serves The Aircraft Industry

1. By constructing subassemblies to manufacturers' specifications.
2. By designing parts for all types of airplanes.
3. By re-engineering parts for mass production.
4. By extending our research facilities to aid the solution of any design or engineering problem.
5. By building complete airplanes and airships.

GOOD  **YEAR**
AIRCRAFT

U. S. Interests Acquire Control of TACA

TWA Largest Purchaser in \$2,225,000 Stock Deal; Widespread Expansion of TACA Seen

By ERIC BRAMLEY

IN ONE of the most important airline financial deals in recent years, definite steps toward the Americanization of the important and widespread TACA system of air routes in Central and South America have been taken, according to reliable information reaching *American Aviation* this week, and indications are that a substantial expansion of TACA is in prospect.

American interests, led by Transcontinental and Western Air Inc., are purchasing approximately \$2,225,000 worth of stock in the TACA system, which was pioneered and developed by Lowell Yerex.

Stock purchasers in the deal are:
• TWA, buying something more than half of the \$2,225,000 worth of stock.
• Stewart McDonald, president and chairman of the board of Maryland Casualty Co.
• Adams Express Co., a New York investment trust.
• Time, Inc., publishers of the weekly newsmagazine.

Purchases of McDonald, Adams Express and Time are each believed to be less than half a million dollars.

Indication that widespread expansion of TACA is in prospect is seen in reliable information that, in addition to these purchases, additional stock will be offered to the U. S. public at a later date to raise several million dollars.

Neither TWA nor the other purchasers will have more than a minority interest in the company, despite the size of the purchases. Together, however, it is be-

lieved that their purchases will constitute control, placing such control in American hands.

It is understood that foreign steamship interests approached TACA earlier this year, attempting to work out an alliance. The U. S. purchases eliminate the possibility of such a deal with the Yerex company.

Americanization of the TACA system has been urged for many years in U. S. government circles. It has been felt that American participation would be in line with the Good Neighbor policy by making available American equipment and technical knowledge to a much greater extent than is now possible. In addition, it has been felt that by participating in the company, U. S. interests could forestall efforts which might be made by foreign countries—possibly unfriendly to the U. S.—from ever obtaining control of the Yerex organization.

McDonald is expected to accept the chairmanship of the TACA board of directors. Yerex and Jack Frye, president of TWA, will serve on an executive committee, and, together with two other officials not yet known, will also serve on the board of directors.

In addition to its purchase in TACA, TWA is also buying a direct interest in Aerovias, Brasil, important Brazilian airline which is controlled by the TACA system. By buying into TACA, TWA will also hold an interest in British West Indian Airways (40% owned by TACA) which together with TACA holds temporary route certificates to Miami.

All TACA stock being purchased is treasury stock in Inter-American Airways, holding company for the TACA system. This name is expected to be changed to TACA—this to be the full name and not an abbreviation. Yerex, who has held a majority of the TACA

stock, will still be the largest single stockholder and will serve as president. He will have a 10-year employment contract to run the system.

The fact that TWA is acquiring a large minority interest does not necessarily mean that it will seek a direct air route connection with the Central American company, it is said. It is probable that TWA not only will lend the company personnel but will also train TACA personnel.

TWA may also look to the TACA system as an outlet for flying equipment no longer suited for trunk line operations in the U. S. but still good for many years of hauling freight over Latin American routes. TACA has used and is using some planes which went off U. S. lines as early as 1933.

American Export Airlines was turned down by the Civil Aeronautics Board in 1941 when it planned to acquire control of TACA (neither TWA nor any of the other purchasers will individually control TACA). CAB's refusal, however, was based on the fact that American Export Airlines was an air carrier controlled by American Export Lines, a steamship company, and that TACA's aircraft could not be used in the public interest by the steamship company along its routes. The Board made it clear at that time that its decision did not prohibit other attempts to buy into foreign companies.

Several U. S. airlines have at one time or another attempted to buy into TACA. One source theorized that Frye and Yerex may have gotten together because "they speak the same language"—are both pilots,

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Howard Hughes

WAL Buys Inland Stock

As this issue went to press it was learned that Western Air Lines is purchasing 83% of the stock of Inland Air Lines. The deal will be subject to approval of the Civil Aeronautics Board. WAL is buying 137,241 out of 164,218 Inland shares.



Jack Frye

Roosevelt Endorses 'Free Air' Doctrine

Makes First Statement On Postwar Aviation; Says Churchill Agrees

PRESIDENT ROOSEVELT and Prime Minister Churchill have informally agreed on a policy of "free air" under which all nations will participate in an interlocking system of airlines for the postwar, the Chief Executive told reporters at a press conference during the fortnight.

This was the President's first statement on postwar aviation. He said that tentative planning has been in progress for six to eight months.

The President proposed:

1. Private ownership and operation of air lines.
2. Government operation of non-profitable foreign lines.
3. National sovereignty of internal aviation.
4. Reciprocal rights for all nations to all air bases under a policy of "free air".

Mr. Roosevelt said that he did not want to put the Government in commercial, passenger and freight service after the war, that he believed all air routes should be operated by private concerns where profitable and that Government operations should be reserved for a few lines operated at a loss purely for communication with new and distant territories.

All postwar planning for aviation, the President claimed, looks to one rather simple objective—free air and a principle of allowing all internal aviation to be controlled by the individual country itself. He illustrated his idea with an example: A Canadian line operating from Canada to the Bahama Islands, should be allowed to refuel in this country but not haul passengers between Buffalo and Miami. This would apply to international lines in all parts of the world, crossing different countries, the President added.

Free use of airports now in use and being built is included in his conception of "free air", the President declared. The ownership of foreign air bases is therefore unimportant, he contended.

The President was answering demands by five world-touring senators that the U. S. secure right to foreign bases built with U. S. funds.

The senators are: Albert B. Chandler (D., Ky.), Ralph Brewster (R., Me.), Henry Cabot Lodge (R., Mass.), James Mead (D., N. Y.), and Richard B. Russell (D., Ga.).

On their return to Washington, the Senators warned the press: Six months after the war ends—the way things stand now—we won't be permitted to land a commercial plane on any of the bases we have built in foreign countries, we will be left stuck in the hole when it comes to postwar commercial aviation. They called for immediate action to obtain rights.

Pointing out that U. S. rights to foreign bases cease six months after the war, and that this means after the war ends there will be no place outside the Western

16 Lines Encouraged By Attitude; Solomon Commends President

Sixteen domestic airlines seeking entrance into the postwar international field took strong encouragement from the first Presidential statement on postwar aviation.

Chairman S. J. Solomon of the Air Policy Committee, representing the group, commended the President's attitude, interpreted it as generally in line with the declared policy of the 16 lines.

"The two pronouncements of policy on postwar international aviation dovetail exactly . . . if we interpret the President's statement correctly," Solomon suggested.

In a public announcement, he declared:

"The Policy Committee of the domestic lines was formed principally to provide against any monopoly in international aviation. This spirit of 'free air' seems explicitly guaranteed in the President's statement and it is certainly realistic to infer that this means also the spirit of competition."

"I am confident that the whole American aviation industry will applaud the President's determination that he does not want to put the Government in commercial passenger and freight service after the war. This is a sound and constructive principle and it reaffirms clearly our belief that free enterprise which has made this country great in the past will continue to operate and open new horizons for the future. The President's declaration for an interlocking system of airlines after the war we construe to mean that we are to engage in friendly competition with our present Allies when peace is restored. The airlines of the U. S. welcome this task because we were the air pioneers and certainly our flying and technical skill will strive to continue this leadership. We believe that we will maintain it because we believe in ourselves. The war record of our aircraft industry and our air services speak for themselves. They will carry on in peace with equal success if the principles expressed by the President today are put into effect. All that the domestic airlines seek is the right to compete for world air markets after the war and at the same time to expand the benefits of air transportation to virtually every community in the U. S."

Hemisphere for U. S. planes to land, Brewster specified: "We haven't a single claim to any of the bases we built across

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Lea, Bailey Enthusiastic Over FDR Plan For Private Ownership

THE PRESIDENT'S plan for private ownership and operation of postwar air lines was enthusiastically seconded by Chairman Clarence F. Lea (D., Calif.) of the House Interstate and Foreign Commerce Committee and Chairman Josie Bailey (D., N. C.) of the Senate Commerce Committee in interviews with *American Aviation*.

"I am entirely in agreement with the proposition that air transport should be under private ownership and operation," Lea said.

"I am not a government-owner," Bailey pointed out. "The Government doesn't run anything well—of course it has to run the Government."

Bailey was cagey, but Lea outspoken in commenting on the President's statement on postwar aviation. Bailey made clear-cut recommendation on only one phase of postwar aviation.

"One strong airline that could cope with the competition of foreign lines," the Senator declared, "is the only sensible plan for postwar U. S. international air transportation."

Bailey said he is not yet committed on the proposal of W. A. Patterson president of United Air Lines, under which the "chosen instrument" of the U. S. would be jointly owned by several airline companies.

"That may be what we will come down to," he remarked, "and if we do, I know the man who should head such a company." The Senator's nomination was Pan American's president, Juan Trippe, whom he pointed out as the man best suited for the post by past experience and record.

The Senator outlawed the possibility and desirability of having 16 airlines operating in the foreign field. "We couldn't have real competitive enterprise in the foreign field; if we are going to have 16 lines—we might as well have 160," he said. A "divide-the-territory" scheme between airlines operating in the foreign field Bailey claimed, (1) would not be competition and (2) would not give the U. S. the strength in meeting foreign competition that one line would.

On the President's suggestion for "free air," the Senator remarked that he is not "crossing that bridge yet . . . Let us wait and see what the postwar world looks like," he proposed. "When you are playing cards you don't tell other players how many aces, kings and queens are in your hand—if you do you lose," he said, adding, however, that "we should, of course, think it all over."

Bailey's remarks appeared to indicate that he definitely favors leaving commitments on postwar aviation until after the war and that he definitely believes that the postwar world like the pre-war world is going to be a "balance-of-powers" and is not going to resolve into any "world state".

(Turn to page 34)

Industry Unites on Vital Policy Issues

Aero Chamber Takes Lead, Endorses Program; Committee Named to Pick Chief Executive

By CLIFFORD GUEST

THE AERONAUTICAL Chamber of Commerce, moving forward with reorganization plans, has emerged from its long period of curtailed activity as the instrument through which the aviation industry now expects to tackle many of its pressing immediate problems. Developments of the past fortnight showed solid backing of Chamber revitalization plans by a large segment of the industry.

The Board of Governors last week in a special meeting held in New York approved a series of recommendations drawn up by the Chamber's Economic Development Committee at its September conference in Colorado Springs, covering contract renegotiation and termination, use and disposition of surplus aircraft and plant facilities, and export policies.

At the same time an advisory committee was appointed to clear the way in the selection of a chief executive as the spearhead for the vigorous program proposed. Budgetary matters also are under discussion and are expected to be worked out by the end of the fiscal year in December.

On the advisory committee are representatives of the East and West Coast areas, the central area, and the accessory group.

These are Guy W. Vaughan, president of Curtiss-Wright Corp.; Eugene E. Wilson, president of United Aircraft Corp.; Donald W. Douglas, president of Douglas Aircraft Co.; J. H. Kindelberger, president of North American Aviation, Inc.; Dwane Wallace, president of Cessna Aircraft Co.; and Ernest R. Breech, president of Bendix Aviation Corp. Actual selection will be made by the Board of Governors after this committee makes its report.

Since the Aircraft War Production Councils are concerned only with production, it was agreed by the council membership during recent conferences in Washington that the pressing issues in connection with contract renegotiation and termination policies should be handled for the industry through the Aeronautical Chamber. Steps already are being taken to advise the entire industry of what is being done along this line. Spokesmen before recent Congressional hearings represented the Chamber rather than individual companies. This is indicative of the need felt by the industry for a strong trade organization.

The complete series of recommendations approved by the Board of Governors follows:

Contract Termination

1. A broad declaration of national policy in connection with settlement of war contract termination claims which should be a guide to Contracting Officers in settling, and to Federal Courts and Boards in rendering decisions on contract termination claims.

2. Legislation providing for uniform termination procedure which will be applicable both to existing and future prime contracts and subcontracts which would assure the legality of regulations issued thereunder. Any legislation should, however, recognize the validity of commitments made in good faith prior to the effective date thereof.

3. Mandatory advance payments up to 90% of the cancellation and termination claims without any interest charge.

4. Authority for contractor, acting in good faith, to make binding settlement with a subcontractor for cancellation charges in an amount up to \$25,000.

5. Legislation providing for governmental assumption at the option of the subcontractor of all subcontracts where claims for cancellation and termination are in excess of \$25,000, including provision for advance payments by the government to the subcontractor up to 90% of his certified claim.

6. Broad legislative authority for reimbursement of termination expenses which will cover such items as leases extending over a longer period than the time required for performance of the contract, and outstanding

commitments which are not specifically applicable to any one contract, and for other costs incurred in connection with war contracts.

7. Legislation legalizing informal orders and contracts similar to the Dent Act passed after the last war.

8. Legislation recognizing termination expenses of subcontractors as reimbursable costs.

9. Legislation providing that the department having the predominant business in a contractor's plant settle the contract cancellation and termination claims on behalf of all other governmental departments.

10. Legislative provision for appeal from the rulings of department heads through presently constituted courts or a special court created to render uniform rulings on contract cancellation and termination.

11. Congressional hearings should be held on the subject of severance payments to employees and on the subject of allowance of reasonable plant reconversion expense.

12. Legislation providing for the continuation of advance, partial and renewal payments during the period between the contract termination and settlement of claims pertaining thereto.

13. Legislation providing that upon the termination of all, or substantially all, wartime contracts, there be declared a moratorium on payments due to the Government under all renegotiation agreements until such time as the Government has made settlement in full of all termination and cancellation claims.

Contract Renegotiation

1. The distribution to aeronautical manufacturers of current and future material on the effect of renegotiation, including:

a. The testimony of Ralph Damon on Sept. 16, and of Francis A. Callery on Sept. 17, before the House Ways and Means Committee.

b. Upon completion, the study of the Harvard School of Business on the effect of renegotiation upon the aviation industry.

2. Maintenance of contact with current developments on renegotiation and that such steps be taken as may become desirable.

3. Preparation of statistics reflecting the financial condition of the aircraft industry and its need for postwar reserves.

4. Stimulation of studies of the conversion period problem in cooperation with aeronautical manufacturers to obtain specific information on the amount of postwar reserves needed and their purposes.

5. That the Board of Governors go on record as approving recommendations contained in the testimony of Ralph Damon and Francis A. Callery.

Government-Owned Aircraft

1. The conduct of studies pertaining to the use and disposition of surplus government-owned aircraft, in the interest of continued opportunities for the development of aviation.

2. That these studies give due consideration to national defense, the public welfare and the necessary protection of the industry and its employees.

3. That technical and industrial services of the industry be made available to the government to assist in the solution of this problem.

4. Legislation reflecting the considered views of the industry.

Defense Plant and Equipment

1. Cooperation with the proper governmental agencies with the view to developing legislation necessary to guide both the government and the industry in the orderly manner of disposing of Defense Plant facilities, both plant and equipment in the era following the cessation of hostilities, so as at once to protect the interests of the

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10,000th P-40 Delivered



Standing beneath the nose of the 10,000th P-40 fighter to be turned out by Curtiss-Wright Corp. since 1940, B. S. Wright, C-W vice president, shakes hands with Col. Walter E. Richards, Army Air Forces resident representative at Buffalo. In background are Peter N. Jansen (left), general manager of the C-W airplane division, and William Davey, general manager of the firm's Buffalo plants. Plane in background is a Curtiss 'Commando.'

New Manpower Controls Proposed By Aircraft Production Councils

KEY EXECUTIVES of aircraft companies comprising the West Coast and East Coast Aircraft War Production Councils, at a joint meeting in Washington last fortnight, advanced specific recommendations to relieve the manpower shortage and hailed Washington conferences with government officials as bringing the clearest coordination between industry and government yet achieved.

The joint council meeting followed a two-day conference between industry leaders and the War Dept. on Sept. 27 and 28 and the sessions were described as "the most important four days" in recent history of the industry. A clearer understanding of the various problems involved in current and future aircraft goals was reached, spokesmen for the Councils said.

The so-called Byrnes West Coast Manpower Program was described in a joint Council statement as "a framework within which the aircraft companies will endeavor to establish procedures." It has the full cooperative support of the western companies where it has now been applied, the statement added.

The Councils went on record urging that national labor conscription should not be considered unless all other efforts failed to solve the critical manpower shortages by voluntary means and cooperation of government, management and labor.

On the controversial question of incentive wages, Frank F. Russell, manager of the National AWPC, said at the conclusion of the conferences:

"In a discussion of wage incentives to spur production, it was agreed that com-

plexities of producing airplanes of constantly changing design make it difficult to arrive at standards applicable throughout the industry.

"The question was left for individual company decision, but the staff of the National Council was instructed to continue studies, in cooperation with military and government authorities, in an effort to find a uniform and simple standard."

Conferences with military and government authorities emphasized the dependence of combat strategy and success upon increased warplane production, and the Councils pledged their fullest efforts to meet announced goals.

"Turnover" of employees, running as high as 100% a year, was listed as the most important single factor in the manpower problem. Advanced by the AWPC as specific steps "which would possibly solve and certainly relieve the pinch of manpower shortage" were the following recommendations:

1. Certificates of availability, through which an effort now is made to control turnover in critical labor shortage areas, should be implemented and strengthened by immediate executive or legislative ac-

tion, to require compliance by both employer and employee. Proper penalties should be established for failure of either employer or employee to comply with the Certificate of Availability Procedure.

2. Continuous draft deferment, for periods of no less than six months, of necessary personnel in aircraft production of the greatest urgency, so long as military and government authorities decree that the aircraft production program heads the list of weapons essential to victory.

3. Return to the aircraft industry, by a screening process, essential workers whose skill and training can contribute most to the war effort on the production front, rather than in one of the military services."

Answering criticism of labor utilization made by Selective Service Director Brig. Gen. Hershey and others, the Councils said:

"There has been a tremendous increase in the pounds of airframe produced per employee, despite the fact that no other instrument of war calls for as many skills in manufacturing as a combat airplane. Perfect utilization of labor, of course, has not been realized—and never was realized by any industry, even when operating in the relatively placid and simple circumstances of peacetime. Utilization must constantly be improved, and the aircraft industry cannot be satisfied with its utilization efforts until aircraft have been produced in the numbers essential for victory."

"Between the day of the Pearl Harbor attack and August, 1943, the total number of airframe industry employees has doubled and pounds of airframe production have increased five-fold. In other words, pro-

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Aircraft War Production Councils Get Together



Specific recommendations for handling the increasingly serious manpower problems were made at a meeting of the East and West Coast Aircraft War Production Councils in Washington Sept. 29 and 30. Among Council members attending were those shown above. Seated, left to right: Donald Douglas, president Douglas Aircraft Co.; La-Motte T. Cohu, president Northrop Aircraft, Inc.; T. Claude Ryan, president Ryan Aeronautical Co.; Lawrence D. Bell, president Bell Aircraft Corp.; J. Carlton Ward, Jr., president Fairchild Engine & Aircraft Corp.; Glenn L. Martin, president The Glenn L. Martin Co.; Guy W. Vaughan, president Curtiss-Wright Corp.; Alfred Marchev, president Republic Aviation Corp. Standing: Charles T. Leigh, vice president Consolidated Vultee Aircraft Corp.; Cyril Chapelle, vice president Lockheed Aircraft Corp.; Roland Burnstan, vice president Brewster Aeronautical Corp.; Victor Emanuel, president Aviation Corp.; P. G. Johnson, president Boeing Aircraft Co.; J. H. Kindelberger, president North American Aviation, Inc.; L. C. Goad, vice president Eastern Aircraft Division of General Motors.

CAB Gets Valuable Data in Feeder Hearing

Testimony Expected to Aid in Forming Postwar Policies for New Operations

By GERARD B. DOBBEN

THE feeder-pickup hearing, one of the most important ever held by the Civil Aeronautics Board, was in its third week as this issue went to press, and observers agreed that the Board is receiving data which will be of inestimable value in formulating policies for the vast postwar expansion in this field.

Large airlines, small airlines, a pickup operator and manufacturers presented testimony during the first three weeks.

CAB officials had their fingers crossed when the hearing started. The feeder-pickup subject is such an "elusive" one that it was feared that such data as might be presented would not be specific enough to be helpful. This fear, however, has been dispelled. The various groups represented have brought to the Board a considerable fund of technical knowledge as well as many considered ideas for the future orderly expansion of the industry. These have included the suggested program for bringing air transportation to practically all parts of the country. They have included the suggestions of some of the leading manufacturers on types of planes that can be provided and the costs of operation in meeting the needs of the new expansion.

CAB members themselves have shown a keen interest in the hearings as evidenced by their attendance. L. Welch Pogue, chairman of the Board, opened the hearings. Member Oswald Ryan addressed the hearings on one occasion to tell chambers of commerce and civic groups how they could be helpful in the submission of evidence which would be useful in the Board's deliberations on particular route applications. Members Harilee Branch, Josh Lee and Edward P. Warner have asked the witnesses many questions during their testimony.

The hearings have been held before Examiners William J. Madden and Alfred F. Beitel. V. Rock Grundman has acted as public counsel. He has been assisted in questioning the witnesses by Raymond W. Stough, director of the Board's Economic Bureau.

It was expected that the hearings would conclude Oct. 21 or 22 when the Greyhound Lines, Inc. submits considerable evidence in connection with the many air transport route applications which it has on file.

The hearing was officially called to order Sept. 28 by C. Edward Leasure, chief of the Board's Proceedings section, who introduced chairman Pogue for an opening statement.

"This investigation," Pogue began, "is about a matter which I have recently referred to as air service to small cities. There has been a very wide and a very keen interest in the expansion that is possible in connection with the development of this air service to small cities. The United States internally is one of the green pastures of the world for air transportation and the Civil Aeronautics Board thought that in view of this very wide and keen interest and great possibilities

for the sound development in this direction, it would be well to have a general exchange of views and data on this subject. That accounts for the investigation."

The chairman pointed out that everyone who might have a legitimate interest and who might have some qualification to speak has been invited to contribute to the investigation and the response has been very wide indeed.

"We are very much interested, all of us, and that includes the entire government and industry in one consolidated front in the vigorous and alert development of our air transportation system. At the same time we are naturally eager to take advantage of the lessons of history, some of the precedents of which are applicable and many of which are not, to the ultimate end that the development of our air transportation system will become and remain as near economically sound as it is possible to have it, consistent with the other best interests of the nation," Pogue declared.

Pogue then expressed the hope that as a result of this investigation, the Board would be able to make clear some of the rules of the game so that "the people who have to make airplanes, the people who will operate the airplane, the communities

and organizations which will prepare the airports, the traveling and shipping public, Congress and the Civil Aeronautics Board will be able to plan intelligently for this expansion which is certainly right before us."

"This investigation," Pogue concluded "will therefore deal with matters having to do with expansion. The studies of the great impacts that this expansion will have upon our economy and our way of living and culture remains for others to study and report upon after we have finished this initial start."

Thus the hearings were commenced on a high plane of objectivity. Examiner Madden called as the first witness, Charles I. Stanton, Administrator of the Civil Aeronautics Administration.

After first paying tribute to aviation's accomplishments both in peace and war, Stanton said: "This is no time, however, to rest on our laurels. And that we do not intend to do so is revealed by this hearing which the Board has called to explore the almost undeveloped fields of air transport—the fields of local, feeder and pickup services.

"We have long had an unrivaled system of trunk-line air services spanning the country from coast to coast, from the Great Lakes to the Gulf. But if air transport is going to do the job it should do, we shall need more than trunkline services. Aviation should be brought to every sizable community that has need of it," Stanton declared.

The witness then recalled that when the railroads had finished building their main East-West and North-South lines, they did not stop there. They began, he said, to criss-cross the country with secondary

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Among Those Present at CAB Hearings



Looking over some charts presented in testimony of Charles I. Stanton, CAA Administrator, are, left to right—Albert F. Beitel and William J. Madden, CAB examiners; L. Welch Pogue, CAB chairman, and C. Edward Leasure, chief CAB examiner; and Mr. Stanton.

Ford Museum Gets Sikorsky Helicopter

THE SIKORSKY VS-300, in which Igor Sikorsky made the first helicopter flight in this country in 1939, has been presented to the Edison Institute at Dearborn, Mich. The institute was founded by Henry Ford in memory of Thomas A. Edison.

The VS-300 made its first flight September 14, 1939 with Sikorsky at the controls. On May 20, 1940, the inventor, who is engineering manager of the Sikorsky Aircraft Division, United Aircraft Corp., received the first helicopter pilot's license ever issued in the United States—Connecticut No. 1. Later, he received the first private pilot's helicopter rating from the Federal government.

On May 6, 1941, the VS-300 broke the world's endurance record for helicopters with a sustained flight of one hour, 32 minutes, and 30 seconds.

The airplane exhibit at the Edison Institute features such "firsts" as the biplane in which E. M. Laird executed the

first "loop the loop" in June, 1916; a monoplane similar to the one in which Louis Bleriot made the first flight across the English Channel in 1909; Admiral Byrd's North and South Pole planes; the German Junkers monoplane "Bremen," which made the first westward crossing of the Atlantic; the first American commercial autogiro, built by Pitcairn Aircraft; a Boeing 40-B2, one of a fleet of 24 planes that inaugurated the first commercial air passenger service across the continent in 1927; and a Stinson-Detroiter, which made the first Diesel flight in 1928.

Aviation Calendar

Oct. 18-21—American Welding Society annual meeting, Chicago. (Aircraft Section, Oct. 21.)

Oct. 20—American Association of Port Authorities, meeting for panel discussion of Postwar Air Trade and Travel, Hotel Roosevelt, New Orleans, La.

Oct. 23—Board meeting of National Aeronautic Association, Statler Hotel, Washington, D. C.

Oct. 26—Air Transport Meeting sponsored by Institute of Aeronautical Sciences, Statler Hotel, Washington, D. C.

Oct. 26-27—Annual meeting, Aero Medical Association, Cincinnati, O.

Nov. 11-13—National Clinic of Domestic Aviation Planning, State Legislative Chambers, Capitol, Oklahoma City, sponsored by NAA.

Dec. 1-3—Aviation Distributors and Manufacturers Association, annual meeting, St. Louis, Mo.

Dec. 2-4—National Aviation Training Association annual convention, St. Louis, Mo.

Dec. 17—Wright Brothers lecture and dinner, sponsored by Institute of Aeronautical Sciences, Washington, D. C.

Warner Back on Job

Edward Warner, vice chairman of the Civil Aeronautics Board, returned to work last week after recovering from pneumonia. He attended the Local-Feeder-Pickup hearing Thursday and asked a few questions which brought out some important revelations concerning the characteristics of the postwar airplane.

Wilson NAA Editorial Chief

Under a change of policy, Gill Robb Wilson, president of the National Aeronautic Association, has taken over personal direction of the editorial policy of the association and its publication "National Aeronautics." S. Ralph Cohen, formerly legislative correspondent for a number of New Jersey newspapers at the statehouse in Trenton, N. J., has been named associate editor of the magazine. He succeeds Swanee Taylor.

Shed Olive Drab Camouflage

Commercial airlines operating out of La Guardia Field, New York, have begun removing the olive drab paint from planes flown by them for the Army in the United States, following an Army Air Force regulation.

May Return Wright Plane

The airplane which the Wright brothers lifted off the sands of Kittyhawk, N. C., nearly 40 years ago may be returned to the United States from England "after the war," it was indicated last fortnight by Orville Wright, surviving member of the famous flying team. Wright frequently has said that the original plane, which has occupied a place of honor in the science museum at South Kensington, England, for more than 20 years, never would be returned to America so long as Samuel Langley's "Aerodrome" was described by the Smithsonian Institution as the first successful aircraft. Since the institution changed its stand last October, however, Wright has been receptive to the idea of returning the plane to this country. The plane is now stored underground, safe from enemy bombers.

New Air Commission Named in Baltimore

A new Municipal Aviation Commission has been named in Baltimore with Robert O. Bonnell, banker, as chairman. Members are:

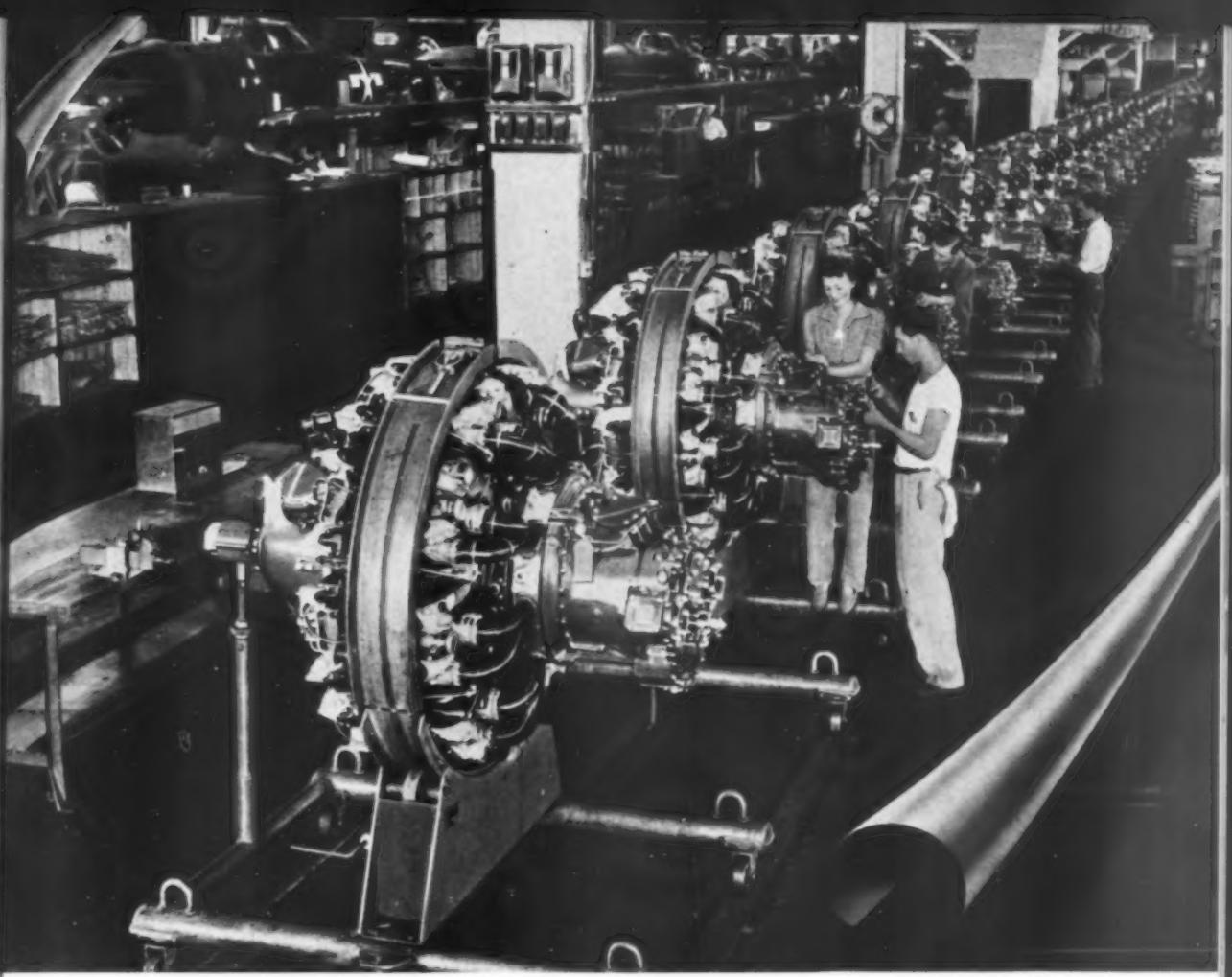
Charles H. Buck, president of the Maryland Title Company; Charles M. Bandiere, member of the House of Delegates; Harry Cohen, president of the Baltimore Federation of Labor; Richard A. Froehlinger, president of the Arundel Corporation; August B. Haneke, general manager of the Chesapeake and Potomac Telephone Company; Irving H. Kohn, president of Hochschild, Kohn and Company; W. Walters Pagon, member of the Commission on City Plan and the city's consulting engineer on the municipal airport; Walter F. Perkins, vice-president and general manager of the Koppers Corporation, Bartlett Hayward division; G. Harry Pouder, executive vice president of the Baltimore Association of Commerce; William F. Schluderberg, president of the Schluderberg-Kurdle Company; John E. Semmes, member of the law firm of Semmes, Bowen & Semmes; Nathan L. Smith, chief engineer and head of the Municipal Department of Public Works.

'Just Enough' Airpower

Every Allied plane on Mediterranean soil was used in the invasion of Italy, Gen. Henry H. Arnold, chief of the Army Air Forces, said in a recent speech in Seattle. The invasion would not have been possible with fewer planes, he said.

"As a matter of fact," he added, "we had to gather these planes together from every source possible—from our training centers, from depots, from modification centers—to do the trick."

Gen. Arnold spoke at the opening of a war games demonstration in connection with a drive to recruit 9,000 new workers for the Boeing Aircraft Co., whose Flying Fortresses he termed "the outstanding heavy bombers of the war—praised by our allies and damned to hell by our enemies."



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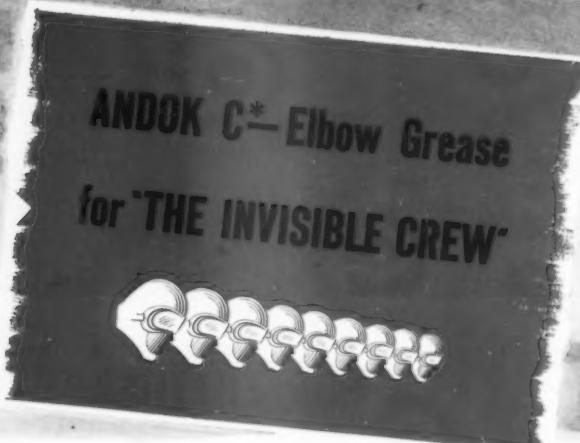
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*ARMY AIR FORCES SPECIFICATION 3560-E



U. S. Needs Air Secretary In Cabinet, Says Loening

WITH a prediction that air transport after the war will reach such efficiency in operation that its rates will compete with those of the railroads, and will "create" a vast new volume of cargo and express business, Grover Loening, air cargo expert and aircraft consultant to the War Production Board, in a recent address called for the creation of a Civil Aeronautics Department in the Federal government with a Secretary for Air.

Coupling his proposal for such a department with an analysis of cost factors and possible future growth of the air industry, Loening also sharply warned the industry that it must prepare to meet a real shortage of aviation fuel, and that monopolistic restrictions in the international transport field will retard the scale of American aviation development.

In his address, delivered before the Traffic Club of New York, Loening declared that we should have had a Civil Aeronautics Department—with a Secretary for Air—long ago. Although asserting that the time is now ripe for it, he was not optimistic that such a department could be created immediately.

"Air transport, airplane usage, air problems, permeate the whole fabric of personal, business and international life of this country, and all this will need a sound centralized governmental organization," he said. "Air matters are certainly as great a separate part of American life as is agriculture or as is the operation of the Post Office. And what better time could there be to make this change in our government than right now?"

"The war has temporarily stalled civil aeronautics and gives us the breathing spell to reorganize and get ready for after



Loening

the war. The few people involved in studying such a department, creating it, organizing it, and getting a Department of the Air founded, would not seriously detract from the war effort, and as a matter of fact, such a move would really help it."

He pointed out that the Civil Aeronautics Board now is striving to handle scores of applications for over 500,000 miles of new air routes and that while air interests may be accused of being over-optimistic, "we have here the indication of how very large the American public is going to insist that air transport become. The very size means a needed change in organization is indicated."

Discussing air cargo's future from a statistical basis, Loening pointed out that the railroads are carrying 600,000,000,000 ton miles of cargo a year, including about 2,000,000,000 ton miles of railroad express—some 15,000 times as much as the airlines were carrying last year. This does not include the vast quantities carried by the Air Transport Command and the Naval Air Transport Service. Generalizing, he said that after the war air operations and all air transport resources of the United States will have a capacity to move about 1% of the total railroad cargo movement. He said in part:

"Those loads that can more easily be carried by air will be found among the 18,000,000 tons of less-than-carload-lot movements of perishables by railroad freight. To that we can add a definite percentage of the 336,000,000 tons of manufactured and miscellaneous items.

"In the perishables we save refrigeration and deliver to the market a big ripe tomato or strawberry picked that morning and uninjured by vibration. In the case of manufactured items, we relieve the dealer of having to carry a large inventory in order to make prompt delivery to his customers.

"We must add to these items the smaller item of railroad express, because air is inevitably going to carry a large proportion of this, amounting now to some 2,000,000,000 ton miles a year. Money talks and right now we have aircraft flying that can meet railroad express charges on their own home ground at 10 to 15 cents a ton mile and give a delivery four or five times as fast."

While foreseeing postwar deflation of aircraft manufacture to about one-tenth of its present size, Loening said:

"When giving effect to the requirements of private aviation which, in a few years, will be around 100,000 planes, and to the new field of the helicopter, and the requirements of the military in a peacetime era . . . the industry at its present huge size could readily deliver 15,000 large transports a year of presently known types. These could carry an easy average

Evolution

In suggesting the establishment of a Civil Aeronautics Department in the Federal government, Grover Loening, aircraft consultant, termed it the A-B-C-D progress of civil aeronautics organization.

"A was the first stage in the years gone by when it was the Civil Aeronautics Authority—the CAA.

"B is when it became the Civil Aeronautics Board—the CAB—which is now currently conscientiously at work under great difficulties and short-handed.

"C is presently what the Lea Bill is going to make it—the Civil Aeronautics Commission—the CAC.

"D is, of course, what this organization ought to be, finally once and for all, to dignify its already great size and great promise and great problems—the Civil Aeronautics Department—the CAD."

Aerial Trolleys

Airplane service between some major cities to be "caught" as one would catch a street car, was predicted for the postwar era in a recent discussion by Grover Loening, consultant on aircraft for the War Production Board.

"It looks very much as if an airline from New York to Washington, for example, would in a short few years after the war, be operated in a totally different manner—not at all on fixed schedules, but exactly as trolley cars used to be," he said. "You will go to the airport to get a ride and merely take the next plane leaving on five or 10-minute headways."

"This sort of thing is what causes such a vast increase in traffic—traffic that is not 'stolen' from any other field. It is a totally new and additional kind of traffic, that were it not for this quick service, wouldn't go to Washington at all."

of five tons at about 200 miles an hour and be operated 3,000 hours a year. Each plane, therefore, could contribute an average of 3,000,000 ton miles a year. And 15,000 of them would give 45,000,000,000 ton miles a year capacity.

"Some of this capacity will be used by passenger traffic. This of course is a yearly production, and kept up for a few years, would mean that on a basis of somewhere around 30% replacement (which is very high) such a production would correspond to a fleet of somewhere around 50,000 transport planes, which could carry 150,000,000,000 ton miles a year, or one-quarter of the total of railroad freight traffic.

"This should have deducted from it, however, two or three other uses for transport aircraft, principally their use for domestic passenger travel, transatlantic passenger travel and an important item of foreign sales. But even if we were to carry a passenger traffic equal to all the present Pullman traffic, and 80% of all the old transatlantic passenger traffic, we would need considerably less than 5% of this total for passengers."

Loening concluded that a large portion of the business "according to the course that history shows such transport movement takes, will be entirely new business and might not be taken away from the railroads at all."

Warning of a "serious headache" which looms in the aircraft field from a shortage of aviation gasoline, Loening said:

"The figures cannot be given because they are information of value from a war standpoint, but let us not forget that operating such thousands of transport aircraft will use a mighty large amount of gasoline, possibly beyond our present capacity. Certainly everything will have to be done in the air transport industry to aim towards the use of cheaper and more readily available grades of gasoline—otherwise, all the fond dreams of air transport on a huge scale may vanish because of the scarcity of the fuel that it would need. A realistic estimate of this must temper overoptimistic predictions."

"Present airplane fuel consuming efficiency is still at a very bad state, where it takes a ton of gas to fly a ton of cargo

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Wichita Takes Realistic View of 'Tomorrow'

City's Manufacturers Confident Postwar Markets Will Open

A COMBINATION of realistic planning and optimism for a thriving post-war airplane industry with solid and continuing demands from a vast field of private buyers marks the outlook of manufacturers in the mid-west aircraft capital at Wichita, Kan.

Reactions to three major questions as to the peacetime future of the aircraft industry, the probable size of markets after military contracts cease, and the time lag between military and peacetime production, put the Wichita manufacturers definitely on the side of strong optimism, backed up by tangible evidence of wide public interest in their postwar planes.

In a series of interviews by *American Aviation* with officials of Cessna Aircraft Co., Culver Aircraft Corp., Beech Aircraft Corp., and Boeing Airplane Company's Wichita Division, the unique concentration of plane plants in this mid-west spot gave every indication of feeling sure of a permanent place in future aircraft production—with markets sufficient to keep them as going concerns after the government has ceased to be the principal buyer.

This is especially true in the lightplane and personal plane field, in which the Wichita group have done an outstanding job of development, and in which a large volume of advance orders and inquiries regarding postwar planes is interpreted as the dawning of an era of planes for "the man in the street."

Make Suggestions

These manufacturers are keenly aware, too, of developments they feel must come in fitting the air age to the general public. To implement widest possible use of personal planes, they advance such suggestions as simplification of CAB regulations on issuing of pilots' license, bringing insurance to the point where it can be carried by "the masses", and putting financing on a basis comparable to the automobile field.

Among the highlights spelling optimism in Wichita's light-plane factories are:

1. Deposits of more than \$1,000,000 in war bonds already made by 1,000 families with Cessna for priority on Cessna's "Family Car of the Air", which has been advertised in a few leading magazines since April, 1942.

2. An average of 100 letters daily coming into Culver's office with inquiries about Culver's "Victory" model—still a secret on blueprint but proposed as a fast lightplane for cross-country personal flying.

3. Calls daily to Beech from pre-war Beech customers to discuss what Beechcraft will offer after the war, and to ask for priority on new versions of Beech's two commercial models which had been brought out before the war.

Cessna and Culver are thinking in terms of the lightplane field altogether. Whether Beech will branch into any other field than manufacture of the twin-engine monoplane and single-engine biplane it produced before the war remains a question. However, postwar manufacture will incorporate the newest developments of Beechcraft engineers.

Don Flower, sales manager of Cessna, and T. Bowring Woodbury, general manager of Culver, outlining plans for their low cost planes, foresee a reasonably quick switch from military to peacetime production with only a few months required for engineering and retooling.

Believing that the size of the personal plane market will depend upon the degree of safety, Flower declared that "anyone fit to drive a car may pilot Cessna's Family Car of the Air." He asserted that with controls similar to those of an auto, instruction for piloting will be a matter "of 15 minutes or so". Designed to sell at around \$2,000, it will use high grade automobile gasoline, will hold two to four people, average 120 miles an hour and can fly from 500 to 600 miles a day. Safety will be the big sales point.

Culver's "Victory" model, according to Woodbury, will probably sell in the range from \$1,500 to \$1,800, will use low octane aviation gasoline and cost three-fourths cent per mile to operate. Probably a coupe at first, plans call for four or five passenger models later. As a cross-country plane, it will have a market in the great expanses of this and other countries where long travel jumps are re-

quired, he believes. Culver had a market in South America previously, and looks to that continent as having a great future for aviation.

Inability to obtain allocation of experimental materials has kept the postwar planes in the planning stage, but both Culver and Cessna are convinced that safety of operation for the average person is actually here. Both believe that present license requirements are too cumbersome, and should be simplified in keeping with safety improvements.

Both Flower and Woodbury predict eventual creation of a gigantic skyways marker system—an air map marked at intervals of 10 miles—which would cost millions to establish but would be cheaper than the nation's investment in highways and rails.

Both factories also foresee use of the many present military runways with enough added at the 10-mile intervals to be the answer to safety traffic and the air traveler will never be more than a few minutes away from a small, but adequate landing strip. Cessna sees refueling done by present gasoline stations on the towns' edges, who will refuel planes as well as cars.

What will be the market for these planes?

Cessna believes only about one-fourth of the pilots returning after the war will be a market for the small plane. Cessna will build for the man in the street, officials said.

Pilots Will Buy

On the other hand, Woodbury believes immediate postwar market for the Culver Victory Model will be pilots, and ultimate market will be the man in the streets.

Both factories look for mass production (not of the Ford variety, in comparison, at first.) Culver hopes, however, to be able to produce 200 planes a month, with a time lag between war and peace of only Saturday to Monday, given some eight months for engineers' work.

Financing plans, both factories believe, will be those similar to financing the auto today, probably done by banks.

Both look to public demand and approval for the lightplane, and foresee a revolutionized business world as the chief result with new cities' growth, and redistribution of population.

Employment at the Culver plant, not greatly increased by war demands, and with overhead, wages and salaries relatively low, will remain as it is, and there will be no retrenchment, Woodbury believes. Employees are promised a future after the war with Culver. Subcontractors will have to live with the industry very closely, 100% under the aircraft plant's roof, to continue sub-contracting after war, Woodbury believes.

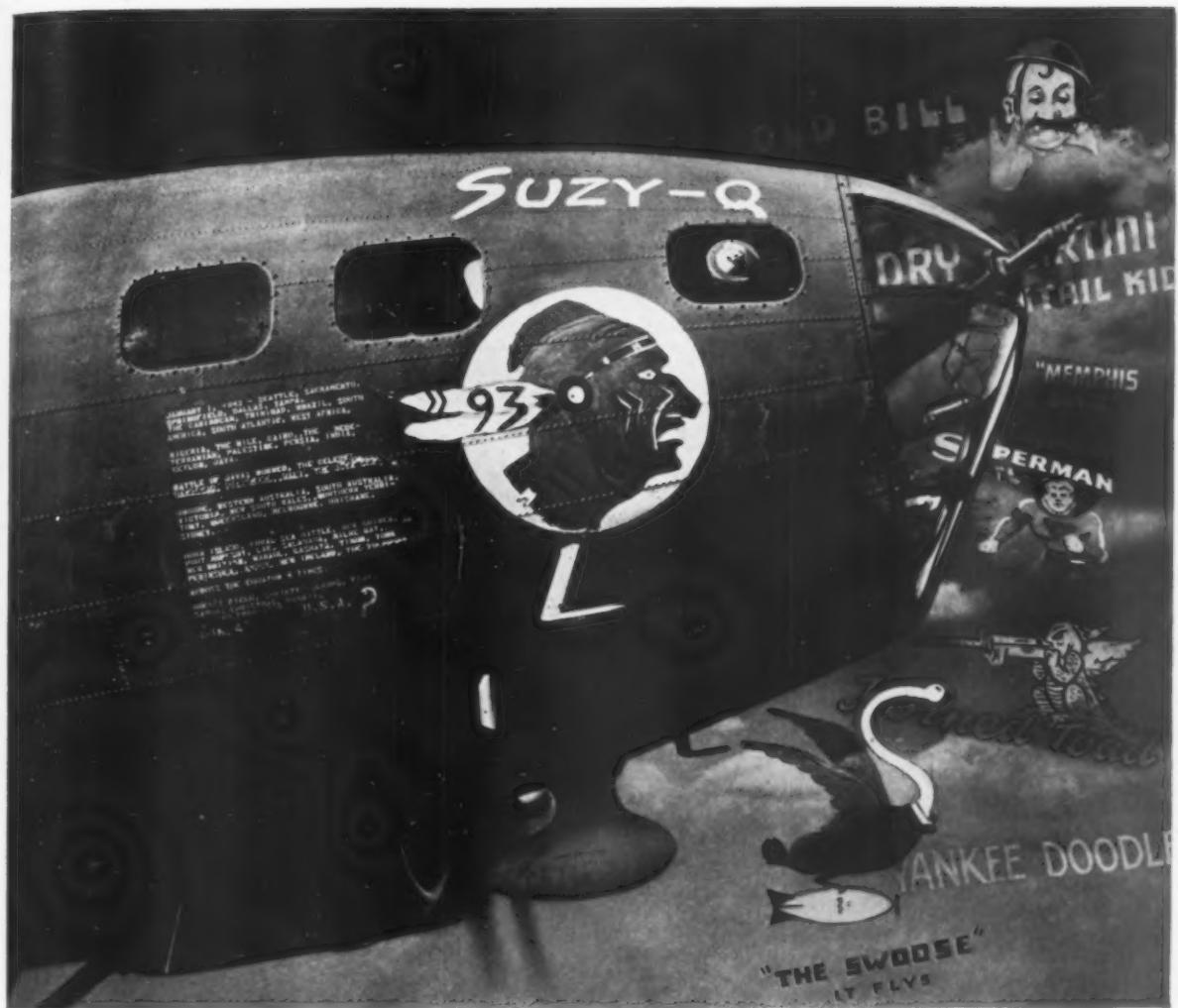
Woodbury believes it the responsibility of the aviation industry and a "trade association job" to see that conditions to make the sale of the family planes are favorable. To pave the way for a definite program, Woodbury suggested:

1. Insurance companies should be approached with a proposition that rates be lowered to a point where every private

(Turn to page 37)



Joseph J. Mitchener, Jr. (left), former War Training Service regional superintendent in the southeastern states, has joined Hawthorne School of Aeronautics, Orangeburg, S. C., as advisor and head of the school's development division. He is shown with Beverly E. Howard, Hawthorne president.



Back the Attack - with War Bonds

Affection

As you read story after story about Boeing Flying Fortresses,* one thing is apt to impress you above all else . . . and that is the deep-rooted affection which Fortress crews have for the sturdy ships which bring them back to their bases, time and again, from fierce battles with the enemy forces.

Consider the case of the Fortress which fought off half a hundred Nazis for twenty minutes and then limped home with her left wing severely damaged, her inboard engine dead, and more than 2000 bullet holes in her tough hide. At the height of the action the skipper

told his crew they could jump. "Sorry, sir," they called back over the inter-phone, "we're too busy shooting down Focke-Wulfs."

Or this, by another pilot: "We were traveling between 400 and 450 miles an hour. According to the slide rules, there was no chance of our pulling out of the dive. But we were goners if we didn't try. There were tearing noises; the bombs were crashing through the bottom. Then the Fortress came up level, and the wings were still with us! She's a great ship, and you know what I mean when I say GREAT!"

Back of stories like these, and the plane that inspires them, there *must* be designing and engineering and manufacturing skills of high degree. The Boeing engineering staff numbers over 3000 and includes men with experience in more than 25 distinct fields . . . structural, electrical, hydraulic, acoustical, metallurgical and many others.

Boeing products have consistently met or exceeded all claims made for them. True today, it will likewise be true tomorrow . . . if it's "Built by Boeing" it's bound to be good.

DESIGNERS OF THE FLYING FORTRESS • THE STRATOLINER • PAN AMERICAN CLIPPERS

BOEING

UAL, Export Reveal Positions on Air Policy

Patterson Favors 'Chosen Instruments'; American Export Asks Competition

A N EMPHATIC statement by United Air Lines that individual airlines should be barred from entering the international transoceanic field, and an equally emphatic assertion by American Export Airlines that regulated competition will be necessary, were thrown into the "battle of words" on postwar global air policy last fortnight.

W. A. Patterson, UAL president, said in a letter to the Civil Aeronautics Board that legislation should be passed prohibiting individual domestic airlines from flying foreign routes. He urged avoidance of government ownership or participation in ownership and suggested that the domestic airlines' know-how might best be used through one or more "chosen instruments." He also mentioned the possibility of participation by both airlines and steamship companies in any "pooling" arrangement.

W. H. Coverdale, president of American Export Airlines, asserted that "regulated competition, as opposed to monopoly—combined with private ownership—and with adequate government and public support will enable United States aviation to secure for America its rightful share of the air commerce of the world in the postwar period."

Answering Patterson's statement, S. J. Solomon, chairman of the Airline Committee on United States Air Policy (the 16 airlines favoring competition), charged that the United president's stand was "as amazing as it is inconsistent."

One School of Thought:

Coverdale asserted that one school of thought now advocates formation of a single, "government-sponsored, monopolistic international airline, in which all American flag airlines could, if they wished, hold an interest, based on some, as yet unannounced, formula. American Export Airlines does not support this plan.

The other school of thought opposes the placing of all of the development of our international air transportation in the hands of a single American company—a chosen instrument—or a monopoly. This school believes in regulated competition consistent with the policies and standards established by the Civil Aeronautics Act. American Export Airlines supports this plan. Furthermore, we do not believe that the alternative to monopoly would be unbridled competition. Far from it. A definite government policy, firmly and impartially administered, can give the country the proper type of well-regulated competition—in the foreign as well as in the domestic field.

"We are, and always have been, unalterably opposed to the thesis of monopoly. We believe that the fostering of monopoly would almost certainly result in Govern-

ment ownership. We do not believe that the old world practice of fostering a Government airline would result in adequate advancement of American aviation. Our country is just too big for such a system.

"Our company and 16 domestic airlines on May 18 of this year signed a declaration of policy against monopoly, and presented it to the Civil Aeronautics Board.

'We Support Competition'

"We strongly support the thesis of competition. By competition we mean that any American flag airline interested in providing air service beyond our borders and into foreign countries, should have the right to make application to a properly constituted Government body, such as the Civil Aeronautics Board. We believe that open hearings should be held by such a body, in accordance with the principles of free enterprise. The number of companies that would emerge with certificates from such hearings would depend upon the ability of the applicants to qualify, and in addition, upon the judgment of the Civil Aeronautics Board and the President of the United States, as to the number of routes and services required in the public interest."

United's recommendation is "that the domestic and transoceanic fields be considered separate and distinct, with a realization that one entering the field of the other will contribute nothing that will strengthen our position as a nation in the field of international trade," Patterson's letter said. "American free enterprise in air transportation can accomplish what is desirable nationally in that field without resort to wasteful subsidy stimulation."

He warned, however, that if government policy should allow domestic carriers to enter the international field, "we must and will protect the standing and prestige of our company." Therefore, he added, the letter is United's intention to file applications for Atlantic and Pacific air routes "if and when it becomes the policy of the . . . Board to permit individual domestic airlines to enter the international transoceanic field."

International air routes cannot be analyzed "as we would a domestic situation," Patterson said. "There is foreign competition to consider and the form and character of that competition must be viewed realistically. Each country no doubt will reach a solution of its own problem in its own way and in accordance with its own philosophy. To arrive at the right answer for the USA it is conceivable that our philosophy of business statesmanship may lead to a proposal that one or more 'chosen instruments' be employed to attain our objective—the preservation of U. S. flag position in world air trade." He later asserted that "it may be that both steam-

ship and airline interests should participate" in any "pooling" agreement.

Pointing to the foreign competition which the U. S. will face, Patterson said that its status at the present is as follows: Government-owned single chosen instruments—Great Britain, Canada, France, Germany and Russia; government-controlled single chosen instruments—Holland and Sweden.

In an analysis of the European market, the letter pointed out that in 1930 (said to be typical of the best years between World Wars I and II) class "A" water-borne passenger traffic between all U. S. ports and all of North and South Europe was 241,685 westbound and 183,547 eastbound. The peak of overseas travel occurs in August and September with a westbound movement averaging approximately 1200 passengers daily. The next highest months, July and October, show traffic at levels approximately one-half of the peak period. The remaining eight months show an approximate average traffic flow of only 400 passengers per day in each direction, or only about one-third of the traffic during the peak period. "It is true we have applied no imagination to the growth of that market at this point," the letter said. "The reason is that we must first determine how we may penetrate that which we know existed prior to the war. To do this should we not compare our past experience in penetrating the domestic field? The penetration of domestic air travel into the class 'A' domestic travel market (Pullman plus Air) from 1939 to date with a forecast through 1948 is as follows: 1939, 10%; 1940, 13%; 1941, 15%; 1942, 19%; 1943, 23%; 1944, 28%; 1945, 33%; 1946, 39%; 1947, 46% and 1948, 54%.

Studies North Atlantic

"Let us apply our experience in the domestic field to the North Atlantic market. We will assume that in the single year 1944 there will be a development in overseas air travel equal in percentage of growth to that which it has taken us 15 years to realize in the U. S. A. domestic air carrier field. By 1944 we may assume that domestic air travel will be 28% of the total class 'A' domestic travel market (Pullman plus Air) provided the war ends during this period and new equipment is acquired. We are therefore assuming that overseas air travel in that year will likewise be 28% of the total class 'A' water-borne passenger travel."

We will go further and apply to trans-Atlantic travel a faster rate of penetration than we believe will exist domestically. Because of greater natural barriers to surface transport and time-consuming distances transoceanic penetration should go faster. From 1944 through 1948 we will double the annual rate of penetration from 6½% as experienced in the domestic field to 13% per year in considering the North Atlantic market. Applying the resulting increased percentages of penetration to the 1930 North Atlantic water-borne class 'A' passenger traffic market results in the following projection of North Atlantic air passengers for the years 1944 through 1948:

(Turn to page 58)

How LIGHTER Airplane Tires Carry HEAVIER Loads

How "U.S." Tire Engineers Answered the
Need for Tires That Can Take the Increased
War Load—without Increasing
Tire Size



P-40 Curtiss Warhawk—Armed at first with but two machine guns firing through the propeller, today's P-40 carries six heavy guns, a thousand-pound bomb load, and much greater armor. Bullet-sealing fuel cells, heavier, more powerful engines and superchargers, along with other new equipment, raised the 1940 weight of 6789 pounds to 9000 pounds today. Again, lighter U. S. Royal Rayon Cord tires carry this increased load at higher landing speeds without even a fraction of an inch being added to the tire size.



P-39 Bell Airacobra—When first produced, the Airacobra weighed about 6000 pounds. Today with heavy machine guns replacing light, with bullet-sealing fuel cells instead of aluminum tanks and greatly increased armor, this fighter weighs 7404 pounds. Tires with cotton cord bodies would not do the job. "U.S." tire engineers, who pioneered rayon cord tires for airplanes, decreased tire weight, added the strength to carry a third more weight—without adding a fraction of an inch to the tire size!

U. S. Royal Airplane Tires and Tubes are engineered for today's loads. They are available in all standard sizes for nose wheels, landing wheels and tail wheels in Static Conductor Construction. Your nearest "U.S." Field Airplane Tire Engineer will work gladly with you on any tire or tube problem.

← **B-17 Boeing Flying Fortress**—The gross weight of the Fortress was 45,470 pounds in 1940. Today, with thirteen heavy guns, with bullet-sealing fuel cells carrying a long-range gas supply, with 10 tons of bomb load, the B-17 weighs approximately 65,000 pounds. But even with this added load, landing at higher speeds, the original 19.00 x 23 tire size was increased only slightly. "U.S." tire engineers first built rayon cord tires as gross weight increased. Then came U.S. Royals with Nylon bodies delivering 64% more strength than rayon tires.

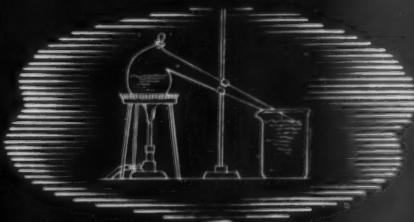


← **B-24 Consolidated Liberator**—In 1940, the B-24 weighed 41,000 pounds. Today, it weighs 65,000 pounds, increased over 50%. From six machine guns to over a dozen in four power turrets, with bullet-sealing fuel cells, with increased armor protection and ten tons of bombs, the original tire size still had to do the job. Lighter, U. S. Royal Rayon Cords replaced heavier, bulkier cotton. And today, more "muscle" to carry the thirty-ton load is built into the new Nylon tires supplied by "U.S." to the Army Air Forces.



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UNITED STATES RUBBER COMPANY



Lessons From The War

From our wartime experience we can say this: When peace comes, Americans will enjoy the comfort and convenience of many strange new devices which are today devoted to military purposes. They will not only extend our span of life but also make it pleasanter in many ways. The 4-plant facilities of The Weatherhead Company are prepared to help you build these peacetime products just as we've helped build America's cars, planes and refrigerators in the past. We offer you better designing than ever, much lowered production costs and a highly efficient service organization.

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THE WEATHERHEAD COMPANY, CLEVELAND, OHIO

*Manufacturers of vital parts for the automotive, aviation,
refrigeration and other key industries.*

Plants: Cleveland, Columbia City, Ind., Los Angeles
Canada—St. Thomas, Ontario

New 24 - Passenger Douglas Planned; Smaller than DC-3

A 24-PASSENGER, twin-engine airplane considerably smaller than the DC-3 21-passenger type in use today is on the drawing boards of Douglas Aircraft Co., Dr. W. B. Oswald, aerodynamicist for Douglas, revealed in his appearance before the Local-Feeder-Pickup hearing in Washington last week.

Dr. Oswald disclosed this information in answer to a question by Edward Warner, vice chairman of the Civil Aeronautics Board, at the hearing Oct. 7. Warner asked whether Dr. Oswald planned to furnish the CAB with information on the characteristics of postwar planes, and pictures as to what they will look like.

"I take it from the figures, for example, that your 24-passenger machine of the future will have about half the power of the pre-war DC-3 and about half the first cost," Warner commented.

"That is very closely true," Dr. Oswald replied. "It is a considerably smaller plane. All of these are two-engine types and are conventional types of aircraft."

In a table of comparative hourly direct operating cost between pre-war DC-3's and the postwar 24-passenger type, the Douglas company revealed that in the case of the DC-3 the cost was \$62.03 an hour against \$36.69 for the proposed new 24-passenger type.

Dr. Oswald's testimony regarding the new type of plane in the offing was of such interest that he was asked to meet with certain Board members the following day in a closed meeting. It is understood he gave them information of a more confidential nature regarding the technological improvements which will make possible the construction of the new type plane.

One of the points which Dr. Oswald stressed particularly in his appearance at the hearing was the bearing which longer runways have on direct operating costs.

"If operating costs are to be kept at a low figure, the length of airfields required in the feeder type of operation is going to be considerably more than the trend in the popular thinking of today," Dr. Oswald said.

Lost time in making stops for loading and unloading planes and the fuel weight factor appear to be important considerations in operating costs on the feeder routes. There appears to be a growing feeling that only by increasing the length of the runways and locating the administration building and refueling operations near the center of them can this lost time be kept down to a minimum.

One factory representative pointed out since the hearing that if runways were sufficiently long so that a plane could taxi to a standstill in front of the administration building, discharge and take on passengers while refueling was negotiated, and then continue on or turn around for an immediate take-off, lost time might be reduced to a minimum. To reduce the amount of fuel to be carried so that additional passenger load might be increased, it was suggested that fueling operations might be made at every stop during the same length of time that a plane was loading and unloading.

No Longer Shy

The aviation industry is evidently overcoming its bashfulness toward Congress.

Rep. Carl Hinshaw's (R., Cal.) suggestion that aviation men acquaint Congressmen with their business problems, and rid themselves of a long-standing aversion toward keeping lawmakers informed, was published in the August 1 issue of *American Aviation*.

Asked for a progress report last week, Hinshaw exclaimed: "The aviation industry certainly took that suggestion to heart!"

"Time is getting short," he added, "and those aviation men who have not yet taken up the suggestion of meeting their Congressmen should do so. Congressmen are, really, eager for information and do not consider information when given to them as such, to be in the nature of lobbying."

FDR Signs Amendment Against Tax Amortization

President Roosevelt on October 5 signed an amendment to War and Navy Department regulations which indicates virtual termination of the tax amortization privilege. Tax amortization provisions were written into the law in 1940, shortly after the start of the nation's rearmament program, in order to encourage private expansion of facilities for the national defense effort. This was accomplished by insertion in the Internal Revenue Code of a new Section 124. The amendment as approved by the President follows:

"The construction, reconstruction, erection, installation, or acquisition of a facility shall not be deemed necessary unless (1) the beginning of the construction, reconstruction, erection, installation, or the date of acquisition of such facility was prior to October 5, 1943; or (2) an application for a Necessity Certificate describing such facility was filed before October 5, 1943; or (3) the Secretary of War or the Secretary of the Navy, in exceptional cases, has determined prior to the beginning of such construction, reconstruction, erection, installation, or the date of such acquisition, that there is a shortage of facilities for a supply required for military or naval uses and that it is to the advantage of the Government that additional facilities for such supply be privately financed."

Qualifications for Licensing of Navigators to Be Established

A MEETING of chief navigators of contract and certificated air carriers in over-ocean flights will probably be held in Chicago soon to explore the possibilities of establishing qualifications for licensing of navigators.

Kerry Coughlin, chief navigator of the Corsairways Division of Consolidated Vultee Aircraft Corp., San Diego, has written to chief navigators of all over-ocean air services suggesting that qualifications be established and asking for comments on a proposed air navigator certificate requirements. He has received replies from almost all of the companies contacted. Several airlines have their own navigators' organizations.

Navigators are the only members of over-ocean crews not now licensed. Pilots, co-pilots and flight engineers are licensed by the Civil Aeronautics Administration, while radio operators hold licenses from the Federal Communications Commission. Up until the war Pan American Airways was the only airline employing aerial navigators until American Export inaugurated trans-Atlantic flights. At present TWA, American, United, Eastern, Corsairways, and one or two others in addition to PAA and American Export, employ navigators.

Purpose of the licensing plan is to establish minimum professional standards as well as to provide crew recognition to the navigators. At the initial meeting the chief navigators will discuss the proposed requirements and when approval is obtained it is planned to submit the proposal to the CAA for action.

"An airplane in military and commercial flying is of no value except in point to

point operation," Coughlin said. "In the case of bombardment aircraft, the mission is a failure if the target is not found at the most opportune time. Commercial operations are doomed to failure if the navigation problem is not solved accurately with the aim of saving time, fuel and maintaining schedules.

"With the advent of the present war, these problems became acute due to the tremendous increase of military operations of a tactical nature and delivery of aircraft, personnel and cargo over long reaches of water or hazardous terrain. This situation has been met by the training of a large number of air navigators, both civil and military. These men have in the past two and a half years aided greatly in the prosecution of the war.

"The importance of a navigator aboard present day aircraft should not be underestimated. Much of the success or failure of the flight depends upon correct calculations on the part of the navigator. The American air navigator is the only member of the crew who is not licensed.

"If we are going to maintain the high standards thus far accomplished in our trans-oceanic airline operations, we must determine—as Britain already has with her first and second class navigators' licenses—that our navigators be licensed".

7th Chinese Class Arrives

The seventh class of Chinese Air Force cadets to be trained in this country has arrived at Thunderbird Field, Arizona, and is receiving primary flight instruction, it was announced last week by officials of Southwest Airways, operators of the training school.

WPB's Wilson Sees Aircraft Production At 80 Billion in '44

"War in a democracy is, and must be, a partnership," Under Secretary of War Robert P. Patterson told the recent Washington conference between War Department officials and 200 executives representing industry, press, and labor.

Total aircraft production for 1944 should be about 80 billion dollars compared with 63 billion for 1943, Charles E. Wilson, Executive Vice Chairman of the War Production Board, predicted. Furthermore, he asserted that the rate of production for the fourth quarter of 1943 would be nearly 75 billion dollars.

"We have a tough job not just to increase volume but to get the new improved models which are needed," he said. "We will always have to be making changes. During 1944 the total volume of production will be relatively stable, but there will be big changes in various program items."

For the first time, Wilson said, industry is in sight of the overall peak of production, but its characteristics must shift from initial capital equipment to maintenance, operations, and similar supplies as well as from obsolescent models. He contended that the goals were within reach but warned that production shifts necessary to obtain them can hardly be painless.

James F. Byrnes, Director of the Office of War Mobilization, told the conferees that he believed each government department should appoint a competent official to study reconversion to peacetime economy.

"Because we are a peaceful people, we were unprepared for war, but because we are peaceful people we must not be further unprepared for peace," he said.

There is a closer cooperation between the war agencies of the government now than at any time during the past year, he said in reply to a question from an industrialist. Through the 4-man Army-Navy production survey committee, he pointed out, there will be a continual stream of requirements which should result in the diversion of manpower and materials from every non-essential program. Commenting upon postwar proposals, Byrnes said if industry leaders and government officials devote too much thought to postwar planning it may delay the peace. Nevertheless, he suggested that government agencies appoint competent officials to study postwar.

Joseph M. Dodge, Chairman of the War Department Price Adjustment Board, appearing before the Conference insisted that complaints against the Army's renegotiation policies usually have not been supported by facts. The War Department has no intention of expanding war contract renegotiation beyond the necessity of war procurement, he declared.

"It is quite possible that our war production expenditures will substantially decline before all hostilities cease," he said. "Ultimately terminations will tend to replace procurement and real competitive pricing conditions on government business will become effected as the requirements for war products decline in importance. When that time comes, but not before, we should eliminate renegotiation."

Japs Have New Fighter

Japan has a new fighter plane "that can outlive the P-38, but cannot outclimb it," it has been reported by Allied pilots who have been in combat with the plane. The new fighter so far has been seen only within 300 miles of the enemy base at Wewak. Members of the "Headhunters" unit of P-38 pilots, who have been making a study of it during combat, say it is about the same size as the Zero, and is believed to have a wing spread of 38 feet, 4 inches, and a length of 28 feet. Its fire power comes from one 7.7mm. gun in each wing, and two 12.7mm. machine guns in the nose. It is equipped with an inline V-type engine, and is harder to down than the Zero because of the armor protection for the pilot which the Zero does not have, the observers reported.

ATC to Assume Supervision of Pilot - Training Program

The Air Transport Command will take over training activities, now being conducted by the airlines through the Airlines War Training Institute, Nov. 1, it was announced at a recent meeting of airline and ATC officials in New York. Col. Harold Harris, head of ATC's domestic transportation division, presided at the meeting.

The airlines have trained pilots and other personnel for ATC since 1942. AWTI has supervised the training. ATC officials emphasize that the change is to be made because Army supervision is deemed desirable at this time, and not because AWTI supervision is unsatisfactory. Many AWTI officials are expected to be identified with the training program in civilian capacities.

Arctic Air Commerce Data Sought in Proposed Study

Two bills looking toward the postwar era of commercial aviation have been introduced by Rep. Alfred Bulwinkle (D., N. C.), chairman of the aviation subcommittee of House Interstate and Foreign Commerce Committee.

One bill directs the Secretary of State and Chairman of the CAB to study and report to Congress on the feasibility and desirability of setting up an international organization for the exploration, ownership and development of the Arctic regions, with a view to the promotion of air commerce.

The other bill authorizes a "study" of problems of postwar domestic and foreign air transport by Interstate and Foreign Commerce. Bulwinkle requested an appropriation of \$10,000 for this study and authorization to travel to foreign as well as domestic points. He reported, however, that the Committee contemplated no foreign travel.

Embry Riddle to Open School In Sao Paulo, Brazil, Nov. 10

The Embry Riddle Co., operators of a flying school in Miami, Fla., will open an aeronautical technical school in Sao Paulo, Brazil, November 10. John P. Riddle, president of the company, said last week. Riddle recently returned from Sao Paulo where he supervised the beginning of remodeling work on the school rooms, which

NWL Approves Wage Incentive Plan for Grumman Aircraft

The fashioning of a wage incentive plan adapted to the particular needs of any company is a major and a complex problem which requires the combined base efforts of specialists and of top executives, the National War Labor Board said in approving a wage incentive plan for the Grumman Aircraft Engineering Corporation.

By the plan, the Grumman Corporation is authorized to pay wage increases based on increases and output above the production standard in accordance with a submitted schedule. Under this, a 2% increase in production results in a 1% increase in earnings of all those employees subject to the plan. However, the Board emphasized, the underlying principles involved in the particular proposal were virtually untested in actual practice. Therefore the company is required to furnish the Board with a review of results at certain periods—the first being January 15, 1944.

In rendering the decision, Dr. George W. Taylor, NWLB public member, stated: "In view of the widespread current interest in plant-wide wage incentives, there is an urgent need carefully to analyze the major problems encountered in the use of such plans. Approval of the Grumman plan without this kind of an analysis might lead to wholly unwarranted assumptions about its general applicability." He stated that the overall wage incentive plan is novel and can only be thought of as an experiment to meet the exigencies of war.

Some of the difficulties which arose in consideration of an incentive program were listed by the Board as: (1) difficulty of establishing a base rate related to the total output of all employees under the plan; (2) changes in type of orders or specifications which might increase or decrease materially the amount of employee effort; (3) management contribution wherein a decrease of man hours per unit or production might be affected by more efficient management or equipment; (4) contribution of individuals or particular groups—a difficulty rising from the fact that because of better working conditions, machines or energy of individuals or small groups, output increases might be irregular throughout a plant or even in a department.

The Board emphasized that approval of any wage incentive proposal is not approval of the technical details of the plan. A full responsibility for such must be assumed by those who develop a wage incentive program. The sole function of the Board is devoted to an analysis of the relation of any proposed plan to the economic stabilization program, particularly to make sure that it does not contain hidden wage increases, the opinion concluded.

are to be situated in the immigration buildings there. He said a three-year contract had been signed with the Brazilian Air Ministry following a visit to the Embry Riddle school by Dr. Joaquim Pedro Salgado Filho, minister of aeronautics for Brazil. A corps of Portuguese-speaking instructors has been hired to teach at the school.

AT TEGUCIGALPA YOU CAN SEE...

OUT OF JUNGLES, swamps, dust and dangers—on coral islands and in sub-arctic wilderness—Pan American has created modern airports the world around.



THIS IS THE WAY the Toncontin Airport at Tegucigalpa looks today—modern and completely equipped. The Honduran Government and Pan American Airways joined forces to create what is now another “stepping stone” to Victory.

THE "GOOD NEIGHBOR POLICY" IN ACTION!

WHEN, before the war, German airlines went into South America, they were not interested in benefiting Latin America . . . They were not even interested in soundly based commercial routes. They wanted *strategic* routes that would one day help them to dominate our Good Neighbors—and also the Panama Canal.

From the very beginning of its operations over 15 years ago, Pan American Airways has proceeded on a completely different basis—a basis of mutual trust with the Governments concerned. In Honduras, for example, Pan American's first airport was built at *San Lorenzo* entirely out of the company's own funds.

Seeing the value of commercial air service, the Honduran Government began to improve a new site for larger planes—the *Toncontin Airport* at Tegucigalpa . . . Pan American placed an engineer at the disposal of the Government to give expert advice on construction.

Today, Pan American has an operating contract with the Honduran Government . . . has moved its facilities to *Tegucigalpa* and now carries international mail and express to and from the *Toncontin Airport*.

Right now, at Tegucigalpa, you can see the "Good Neighbor Policy" in action to the benefit of all concerned. Pan American has made a lot of friends for the United States in building its world-wide Clipper routes. . . . Friends in Europe, in Africa, in the Orient and in Australasia as well as throughout Latin America.

Without exaggeration, it can be said that the existence of routes pioneered by Pan American has increased this country's prestige abroad and has saved the United Nations' aerial war transport many months—maybe even years.

Wings over the World
PAN AMERICAN WORLD AIRWAYS



BACK THE ATTACK
WITH WAR BONDS

Surface Carriers May Yet Make Inroads Into Aviation Field, Say 2 Congressmen

Two members of the House Interstate and Foreign Commerce Committee indicated to *American Aviation* last fortnight that the battle to keep surface carriers out of the aviation field is not over.

The two, Rep. Lyle Boren (D. Okla.) and Rep. Carl Hinshaw (R. Calif.), both support the policy of barring surface carriers from the airline field.

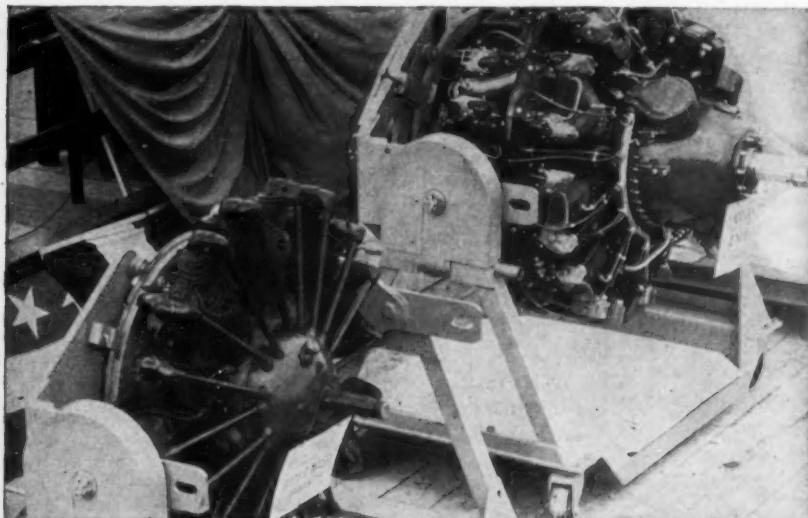
Boren remarked that the bill would have been taken to the House floor "long ago", except for controversy over its attitude toward surface carriers. The Committee, he estimated, is "almost equally" divided on the issue with "only a slight majority" favoring the policy of leaving the air to the airlines.

"I hope that that battle—over whether surface carriers should be permitted to enter the air field—has been settled, and that it will not be carried out of Committee onto the floor of the House," said Hinshaw. "If it is, it would demonstrate my contention at the time a separate standing committee for commercial aviation was under consideration in the House, that the Interstate and Foreign Commerce Committee is, in part, dominated by thinking along surface carrier lines—a considerable part."

Pointing out that airlines have assets amounting to around \$57,000,000 and railroads, alone, assets amounting to around \$23,000,000,000, Hinshaw declared that at the present time it would only be a "drop in the bucket" for surface carrier interests to buy the whole aviation industry and thus ward off competition.

"I strongly believe that the aviation companies who pioneered in the business should be allowed, at least, to firmly establish themselves before surface carriers are permitted to enter the air field," he said.

Pratt & Whitney Wasps—Old and New



The first Wasp aircraft engine, built in 1925, is pictured (left) beside the 100,000th at the plant of Pratt & Whitney Aircraft, Division of United Aircraft Corp., East Hartford, Conn. Wasp No. 1 developed 410 hp; No. 100,000, a "double Wasp," develops 2,000 hp.

New AAF Installation

The War Department recently announced an award of contract to Morrison-Knudsen Co., Inc., and Ford J. Twaits Co., Los Angeles, Calif., for construction at an Army Air Forces installation in Jefferson County, Oregon, to cost over \$1,000,000. The work will be supervised by the Portland, Oregon District Office of the Corps of Engineers.

Admiral King Says Navy's Strategy, Tactics Revolve Around Use of Airplanes

The U. S. Navy's strategy and tactics revolve around the use of aircraft, Admiral Ernest J. King, commander in chief of the fleet and chief of naval operations, declared in an address before the recent national convention of the American Legion in Omaha, Neb. It was one of the most direct statements of the kind relative to the importance of naval aviation yet made by the naval command.

"The Navy's strategy and tactics have always revolved around those weapon-bearers which can hit the farthest and the hardest," Admiral King said. "In this present war those bearers are aircraft. This is thoroughly understood by all Naval officers."

Admiral King drew a picture of Naval aviation "fully integrated into the fleet as it has been from at least 1925 onward." He said that for 18 years all Naval officers "have been habituated both in precept and in practice to being shipmates with aircraft."

The admiral pointed out that a Naval Air Service was first organized in 1913 by a board appointed by Franklin D. Roosevelt as acting secretary of the navy. In 1921 the Bureau of Aeronautics was created by act of Congress and was headed for 12 years by Admiral W. A. Moffett.

Additional Funds Asked for Aviation

The President has asked Congress for additional appropriations of \$3,081,000 for the Civil Aeronautics Administration, \$17,546,700 for National Advisory Committee for Aeronautics, \$1,950,000 for aviation facilities for the Weather Bureau, \$22,779 for domestic air mail service, and \$280,000 for domestic air mail indemnities.

The supplemental CAA appropriation is required because of "accelerated demands on the agency for services and facilities to accommodate the rapidly increasing air traffic in the U. S. and its Territories in the prosecution of the war," the President stated. The \$3,081,000 supplemental is allocated as follows:

Establishment of Air Navigation Facilities	\$ 697,000
Maintenance and Operation of Air Navigation Facilities	2,250,000
Technical Development	70,000
Enforcement of Safety Regulations	64,000

NACA supplemental estimates "are made necessary by acceleration of the scientific research work and the technical investigations of the Committee to meet the urgent demands of the military establishments," the President reported. Following is the breakdown for the \$17,546,700 asked for the Committee:

Salaries and Expenses	\$2,557,400
Construction and Equipment, Langley Field, Va.	8,804,200
Construction and Equipment, Ames Aeronautical Laboratory, Moffet Field, Calif.	2,249,100
Construction and equipment, Aircraft Engine Research Laboratory, Cleveland, O.	3,936,000

"Further increases in aviation weather services made necessary by the expanding volume of air traffic" account for the supplemental requested for the Weather Bureau, the President said.

The \$22,779 asked for domestic airmail service will be used to make retroactive adjustment in payments for airmail transported over Route 49. An increase in rates for this route, operated by All American Aviation, was authorized by the Civil Aeronautics Board June 29, 1943, and made effective from April 10, 1943.

On requesting \$280,000 additional for domestic airmail indemnities, the President reported: "This estimate of appropriation is required to meet the unexpected increase in the volume and amount of claims which have developed as a result of unanticipated losses of registered, insured, and collect-on-delivery mail, and the increase in the value of enclosures of individual parcels, lost or damaged, for which claims have been received."

New Training Units Set Up

Maj. Gen. T. J. Hanley, Jr., commanding the Army Air Forces Eastern Training Command, has announced the activation of 21 new units for the training of flight instructors. These units, designated AAF War Service Training Detachments, are under the jurisdiction of the Eastern Flying Training Command with headquarters at Maxwell Field, Ala. They will provide instructors for civil contract schools.

*Whatever the shape
of Planes to come **

* **WHAT ABOUT ENGINES
FOR THESE NEW PLANES?**

"YOU'VE been talking a lot in your advertising about post-war planes," says a letter from a well-known aircraft manufacturer, "but what kind of engines are you going to give us to power them?"

A fair question—and here, we hope, is a fair answer. It now appears that high octane fuels and new, lighter metals will be generally available at low cost after the war. Assuming this, post-war Franklin engines will be lighter, more powerful, less expensive, and as dependable and economical in operation as ever.

They will weigh less through greater use of aluminum, magnesium and plastics. Higher octane fuels will produce more power with the same

displacement. In other words, Franklin engines for the planes to come will have a far more favorable power-weight ratio, developing more horsepower per pound of engine weight. Greater production volume and finer manufacturing facilities should inevitably reduce the price of each engine.

All the war born knowledge gained by Aircooled Motors engineers during their years of designing and building new Army and Navy warcraft engines will be put to good use. With the return of peace it will mean finer Franklin engines for your private and commercial planes.

**AIRCOOLED MOTORS CORPORATION
SYRACUSE, NEW YORK**



'Clinic' at Oklahoma City Expected to Study Major Domestic Aviation Puzzles

The "national clinic on domestic aviation planning" scheduled by the National Aeronautic Association at Oklahoma City Nov. 11 to 13 is beginning to shape up as a significant event which may bring together some of the best current thought on the future problems of the industry.

The state of Oklahoma will be the official host and meetings will be held in the state assembly chamber in the Capitol. NAA spokesmen describe the meeting as "neither a convention nor a forum" but a clinic for examination of specific problems.

L. Welch Pogue, chairman of the Civil Aeronautics Board, will open the program with an address on "The Domestic Air Pattern for Tomorrow," following which discussion will be led by C. Bedell Monroe, president of Pennsylvania-Central Airlines.

William A. M. Burden, special aviation assistant to the Secretary of Commerce, will present "The Pattern and Policy for Aviation Facilities of Tomorrow," with O. M. Mosier, vice president of American Airlines as floor discussion leader.

Remainder of the program has not been completed, but subjects scheduled for discussion include: "The Place of the Municipality in the Air Pattern," "Analysis of Air Travel Expectancy," "Analysis of Air Cargo Expectancy," "The Primary Transportation," "Long Range Transpor-

tation," "Personal Aircraft," "The Fixed Base Operator," "The Aviation Trade School," "The Academic Program for the Air Age," "The Place of Aviation in Higher Education," and "The Helicopter."

NAA headquarters said requests for a place in the clinic have been coming in from every component of the industry, and the coordination of all aviation organizations has been assured. The conference will be confined strictly to the problems of domestic air development.

Postwar Air Trade, Travel Meeting Planned for Oct. 20

A panel discussion on Postwar Air Trade and Travel will be held in New Orleans Oct. 20 under the auspices of the American Association of Port Authorities. The meeting will be held in Hotel Roosevelt there, with G. H. Pouder of Baltimore as chairman. Other participants include:

Charles B. Donaldson, Director of Airports, CAA, for technical aspects; Stuart G. Tipton, Assistant General Counsel, CAB, for economic aspects; Carleton Putnam, president, Chicago and Southern Airlines, with Richard S. Maurer, Assistant General Counsel, Chicago and Southern Airlines, as alternate; and John C. Cooper, vice president, Pan American Airways System. In addition, there may be a Canadian government representative.

The general discussion probably will center around integration of aviation into programs and policies of state or city Port Authorities, overseas routes in existence and applied for and government policy and legislation.

A Century of Aviation Experience



A total of 116 man-years of aviation experience is represented in the above photo. The supervisory personnel of the Civil Aeronautics Administration's sixth regional office at Santa Monica, Calif., includes, left to right—(standing) James E. Read, superintendent of safety regulations, 26 years; Art Johnson, superintendent of airways, 23 years; A. Harold Bromley, superintendent of war training, 22 years; George Hammond, administrative officer, 16 years; (seated) R. W. F. Schmidt, superintendent of airports, 14 years; and H. Arthur Hook, regional manager, 15 years.

Wright Field Engineers List Major Improvements In Fire Power Since '18

The Armament Laboratory, Army Air Forces Materiel Command, Wright Field, recently listed the following "major improvements" in aircraft offensive and defensive fire power since the last war:

1. Development and improvement of the high cyclic rate small caliber machine guns, the most important of which is the .50 caliber gun and aircraft cannon.

2. New electric and hydraulically controlled fire control systems, remotely controlled and locally operated multiple machine gun turrets. Fire controlling devices, such as so-called computing sights now responsible for so many enemy airplane casualties.

3. Practical application of new and unerring bomb sights and allied equipment.

4. The 20 mm, 37 mm, and larger caliber aircraft cannon.

5. Bomb racks, shackles, and release mechanisms.

"All of these items were developed and perfected by engineers at Wright Field with the cooperation of various commercial manufacturers, and are accredited by men from the various combat theatres as being equal to, and in many cases far superior to anything the enemy is using," said the laboratory report.

Aero Sciences Institute Schedules Speakers for Air Transport Subjects

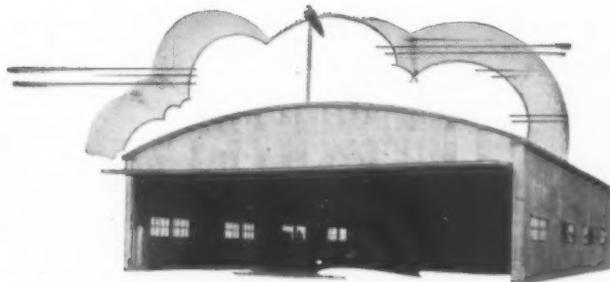
Governmental and civilian authorities will discuss present and future air transport problems at a national meeting at the Hotel Statler in Washington, D. C., Oct. 26, sponsored by the Institute of the Aeronautical Sciences of New York.

Some of the problems to be discussed are: domestic air cargo, airport design, intercontinent flying, and postwar planning. Speakers will include Colonel H. R. Harris, commanding officer of the domestic transportation division of the Air Transport Command; John C. Leslie, manager of the Atlantic division of Pan American Airways; William Littlewood, vice president in charge of Engineering, American Airlines; Robert Buck, pilot captain, Transcontinental and Western Air; Grover Loening, consultant on aircraft, War Production Board; and C. Bedell Monroe, president, Pennsylvania-Central Airlines.

The meeting will be held in two separate sessions—one session commencing at 2 p.m. with Loening as chairman, the other starting at 7 p.m. with J. Parker Van Zandt of the Brookings Institution as chairman.

A schedule of national meetings for 1943-1944 was also announced as follows: Wright Brothers Lecture and Dinner in Washington, D. C., on Dec. 17; 12th annual meeting and "Honors Night" dinner in New York in the latter part of January, 1944; an Engine and Accessory Production Meeting in Detroit in April, and a Design and Postwar Planning Meeting in Los Angeles in July, followed again by the air transport meeting and Wright Brothers lecture.

from small
beginnings



BYRNE doors

... a veteran Detroit Industry

A score of years ago, when Aviation was still in its fledgling days, Byrne engineers set out to build a better hangar door . . . one that would banish the curse of the awkward barn-type slide door then in use.

The BYRNE canopy door was born. It was destined to become the standard of the modern hangar. Today this Detroit product, now of

many types, is opening and closing swiftly, dependably, and economically in hangars and plants throughout the Americas.

Two decades of experience have made Byrne engineers the most widely consulted civilian authorities on hangar doors. Contemporary and post-war planners are invited to discuss their door problems with Byrne engineers.

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★ BYRNE DOORS FOR OPENINGS OF EVERY TYPE AND SIZE ★

TACA Deal

(Continued from page 15)

started with nothing and built up their own organizations.

The influence and help of Howard Hughes—a veteran pilot himself, like Yerex and Frye, and a large TWA stockholder—is also given much of the credit for consummating the deal. Hughes has been noted for his far-sightedness in international aviation matters.

Stewart McDonald, a new name in aviation is active in various businesses and had served for several years in different government positions. In addition to being president and chairman of the board of Maryland Casualty Co., he is chairman of the executive committee of the Baltimore & Ohio Railroad, and a director of the Baltimore National Bank, Warren Pipe & Foundry Corp. and the Savoy Plaza Hotel.

TACA is generally recognized as the world's largest commercial carrier of air freight and express. Throughout Central America it has done an outstanding job of providing transportation for all types of passengers and goods in areas where ground transportation is almost impossible. During 1937-41 it transported more than three times the total express flown by all U. S. domestic airlines.

Now in its 11th year of operation, TACA serves four Central American republics—Honduras, El Salvador, Nicaragua and Costa Rica, as well as British Honduras and Panama. Flying more than 2,000,000 revenue miles, TACA carries 60,000 passengers and 25,000,000 pounds of mail, express and freight annually, owns 36 airplanes, 36 radio stations and has large and modern maintenance facilities.

The TACA system has been built up without a subsidy.

Included in the TACA system are Transportes Aereos Centroamericanos S. A., incorporated in Honduras and conducting service between points in Honduras and British Honduras; Compania de Transportes Aereos Centro Americanos de Costa Rica, incorporated in Costa Rica and operating in Costa Rica and between Costa Rica and Panama; Compania Nacional TACA de Nicaragua, incorporated in Nicaragua and conducting air transportation in that country; TACA, Sociedad Anonima S.A., incorporated in El Salvador and operating between the capitals of Costa Rica, Nicaragua, Honduras and El Salvador.

British West Indian Airways was organized by Yerex in 1941. It has operated from Port of Spain to Tobago, Barbados and Grenada, and holds temporary certificates from CAB for Port of Spain-Miami service.

Aerovias Brasil, which operates important routes through the central portion of Brazil with a contract operation to Miami, was organized by Yerex in 1942.

Both these latter companies are part of the TACA system.

New Bendix Booklet

The Eclipse-Pioneer Division, Bendix Aviation Corp., has just published an illustrated booklet entitled, "Aircraft Instruments," which includes information on the fundamentals of their operation and their principal uses.

Massachusetts Takes First Step Toward Construction Of Transatlantic Terminal

The public works department of Massachusetts submitted to the Governor's council last fortnight plans for expansion of Logan Airport, East Boston, including conversion of the mud flats of the East Boston-Winthrop area into an extension that will enlarge the field from 270 to about 1,200 acres.

The filled-in flats will provide area for four runways, three of which will be 7,000 feet long and suited for takeoffs of heavily loaded transatlantic planes. A fourth runway will be 5,000 feet long.

Powell M. Cabot, chairman of the Massachusetts Development and Industrial Commission, stated that the blueprint for the airport provides for ultimate construction of dual hard-surfaced runways 200 feet wide and 10,000, 8,000 and 7,000 feet in length.

Roosevelt

(Continued from page 16)

North Africa. In fact we are not allowed to land a commercial plane at any of them even now."

Russell added: "We must evolve a policy right away to acquire postwar rights to these bases. After the war will be too late."

"In other words, we need wide planning now for postwar aviation," interposed Brewster.

Asked whether there was any assurance that foreign bases would be available for American air operations six months after the war, the President answered indirectly by saying that there was no assurance now that either he or the questioners would be alive six months after the war.

The President's contention that ownership of foreign air bases is unimportant under a policy of "free air", however, is not expected to forestall Congressional moves to acquire guarantees for American usage in the postwar.

Capitol Hill men are questioning: Suppose a policy of "free air" is not adopted? Under any circumstances, should the U. S. drift into the postwar with no assurance against being left in the lurch, as far as foreign landing spots go, after we have invested billions in constructing them?

The issue of foreign bases is still expected to be in the foreground in Congress. The Truman Committee as a group is concerned. Military and Naval-minded representatives are interested in the question from the security angle. In addition to the five globe-girdlers, scores of Senators and Congressmen, speaking individually, have demanded U. S. commercial and military rights.

A concerted effort for base rights in the Pacific area is being made by a subcommittee of the House Naval Affairs Committee, headed by Rep. Magnuson (D., Wash.). The Navy, he said, has a tentative "blueprint" of permanent air and ship bases which it will want to own for policing purposes in that area. But the Naval Affairs group is as much interested in commercial, as military rights to these bases, he added, because security in the postwar Pacific will be closely bound up with commerce.

Lea, Bailey

(Continued from page 16)

In discussing the President's remarks, Bailey significantly dropped a reminder that the Senate will approve any and all commitments by a two-thirds vote before they become effective.

Lea, on the other hand, commented freely on the President's position, generally supported it, but with two qualifications:

(1) That passage of foreign planes over U. S. territory should be regarded as a "privilege", not a "right"—as might be interpreted by the term "free air";

(2) Non-profitable foreign routes should be privately operated, with Government subsidization, not government-owned.

Lea indicated that his policy of "national sovereignty" of airspace is basically not in disagreement with the President's plan of "freedom of the air". He pointed out that his opposition to "freedom of the air" has arisen to some extent from the general manner in which the phrase has been used, without specifications. Lea is in thorough accord with the principle that other countries should be allowed to operate over the U. S. "But it should be regarded as a 'privilege' and not a 'right,'" Lea said, suggesting that under a policy of "freedom of the air," foreign nations might construe such an allowance as a "right" and not as a "privilege" granted to them. For this reason, Lea said, he hesitates to endorse "freedom of the air" until it is specifically defined. On the proposition, however, that foreign lines should be given passage over U. S. territory, Lea and the President are agreed.

Lea differed with the President's proposal that non-profitable foreign routes be operated by the Government. He said: "I make the suggestion that where we have such a foreign line . . . that line should be private, that we should give it compensation, and under economical management allow it to operate on its own as an independent enterprise."

Bailey commented, in this connection, that he had not yet chosen between Government operation of non-profitable routes and private operation with Government subsidization.

Obituaries

Col. Richard Aldworth

Col. Richard Aldworth, 49, of the Army Air Forces, former manager of the Newark (N. J.) Airport, who recruited the "Flying Tigers" for service in China, died last month in a military hospital in San Antonio, Tex., after a long illness. The day before his death he was awarded the Legion of Merit for his services to the AAF. In 1937, he received the Distinguished Flying Cross for landing his disabled pursuit plane in the surf off of an Atlantic beach to avoid hitting women and children.

Hanyin Cheng

Flight Lieut. Hanyin Cheng, 29 years old, only woman member of the Chinese Air Force, died last month in Vancouver, B. C., after a brief illness.

"Old Hellcat"...

A Bomber Built to Take on Odds and Come Back Fighting



In Every Theatre of War, Martin B-26 Marauders have precision-bombed, skip-bombed, strafed, and even torpedoed the enemy. Like *Old Hellcat**, veteran of Tunisia, Sardinia, Pantelleria, Lampedusa, and Sicily, they have repeatedly survived terrific punishment to fight their way clear and return to base. Planned specifically for difficult Army missions, the Marauder was the first airplane to employ 4-blade Curtiss Electric Propellers which combine the features of smaller diameter, durable hollow steel blades, and quick feathering for emergencies.

Curtiss
ELECTRIC PROPELLERS

**Old Hellcat* together with *Lady Halitosis* and *Jabbo the Skyking II*, is now back in this country. These battle-scarred Marauders are making a nation-wide tour of war plants and Army bases.

Curtiss-Wright Corporation • Propeller Division

Perfect Reception



BREEZE RADIO IGNITION SHIELDING GUARDS COMMUNICATIONS AGAINST INTERFERENCE...

Success in modern warfare on land, on the sea and in the air depends largely on interference-free reception and transmission of messages by radio. Breeze Radio Ignition Shielding, designed for use on hundreds of different types of internal combustion engines, insures dependable communications by eliminating at the source interference caused by the radiation or absorption of high frequency impulses. Used in conjunction with Breeze Fittings, this Shielding solves the varied problems of installations ranging from PT boats to aircraft.

Breeze engineers have pioneered and perfected Radio Ignition Shielding through many years of research—a background of experience in the field which is reflected today in the outstanding performance of Breeze Shielding on the battlefronts of the world.

BREEZE CORPORATIONS, INC., NEWARK, N. J.

Breeze



Industry Units

(Continued from page 17)

government, the economy of the country as a whole and in particular the maintenance of as high a degree of employment as possible in the aeronautical industry, including the retention of skilled technical staffs, and at the same time recognizing the importance of maintaining all such of these facilities as the aircraft manufacturing industry may require on terms satisfactory to the Government and to the members of the industry in the fulfillment of any program which it may be required to carry out in the period following the termination of the war.

Export

1. That, through Federal legislation or regulation or other action by Congress or administrative agencies of our Government, no uneconomic distribution abroad be effected of surplus or Lend-Lease aeronautical products of U. S. manufacture; further that liquidation of this phase of our war effort be accomplished in such manner as to safeguard against anything in the nature of "dumping" which through its encroachment on the aeronautical manufacturing industry would destroy or seriously cripple one of our greatest national assets and its employment potentials.

2. That, in the interest of the normal and progressive development of a sustaining volume of foreign trade in the peacetime products of our great aeronautical industry, export licensing requirements, by whatever agency of the Federal Government administered, be abolished or that the regulations under the Munitions Control Act be modified to a point where they will no longer be a trade deterrent.

3. That, all diplomatic and other representatives of our Government stationed abroad whose duties encompass functions of an economic trade promotional nature be especially trained, authorized and instructed to lend every possible direct assistance in the furtherance of foreign trade in our aeronautical products as has been usual in the case of non-aeronautical products; further that this assistance be of the same aggressive nature as that provided in the past and to the extent possible currently by foreign representatives of other countries which have aeronautical products to offer in competition.

4. That, full consideration of the importance to our national interest be given to aeronautical exports in the future negotiation of Reciprocal Trade Agreements to the end that existing low tariff rates be bound or "frozen" and that where such rates are considered too high by the American industry substantial reductions be sought.

5. That, where prospective foreign buyers of our aeronautical equipment or related products seek financing in the United States and commercial banks are not able or otherwise free to provide such accommodations, the RFC or such other Federal agency as may after the war be in a position to assist in the furtherance of the financial aspects of export trade which is in our national interest provide such moneys or guarantees of risks and on such terms as are at least as favorable as those offered by the manufacturers or governments of other aeronautical manufacturing nations.

6. That proper agencies of our government be urged to expedite organization and affiliation with an international group set up to rationalize airworthiness standards to facilitate entry of all aircraft in all countries.

New Aviation Gas Facilities

Standard Oil Company of Indiana will rank as "one of the leading producers of 100-octane aviation gasoline" with the completion of several new units this winter at its Whiting, Ind., plant, says a company announcement. New alkylation, isomerization, and catalytic cracking units and new fractionating towers are being erected.

Renegotiation Arguments Keep 2 Committees Busy

Long hours of laboring over ramifications of the renegotiation law by two committees of the House last fortnight resulted in no major accomplishment but were evidence of the high controversy which exists in Congress over certain aspects of the nation's wartime profit limitation law.

The House Ways and Means subcommittee on renegotiation, headed by Rep. Disney (D., Okla.), met regularly, but reached agreement on only minor changes to the law, such as:

(1) Inclusion of provision for court review, with U. S. Court of Tax Appeals, for contractors opposing the renegotiation terms imposed by a Government Department;

(2) Increase in the exemption from the law for contractors whose annual Government business totals less than \$100,000 to those whose annual business is under \$500,000;

(3) Stipulation that renegotiators allow the same costs as are allowed by tax law;

(4) Disallowance for inordinate salary contracts;

(5) Allowance for full amortization.

Meanwhile House Naval Affairs Committee voted to accept, as a majority report, the report of its Investigating Committee (American Aviation, Oct. 1), after individual voting on the numerous recommendations. Chief change to be included in the majority report is a recommendation that exemptions from the renegotiation law be limited to contractors doing under \$100,000 annual Government business and not increased to an exemption of \$500,000, as was recommended by the Investigating Staff.

Renegotiation "after taxes" proposed for the aviation industry by F. A. Callery was defeated 17 to 5 in the Committee.

A minority Naval Affairs report is expected. There is a strong possibility that the minority group will advocate outright repeal of the law.

Manpower Controls

(Continued from page 18)

duction per employee is now 2½ times greater than on Dec. 7, 1941, in the airframe plants and similar or greater advances have been made by the engine and accessory manufacturers.

"To further illustrate, in construction of an attack bomber the work of 100 men now is done by 9 men.

"In terms of cost to taxpayers, an airplane component called a spar cap assembly which cost \$2.12 per pound at the start of the war has been reduced to a cost of 95c per pound by simplification of manufacturing method in order to better utilize labor.

"Engineering, tooling and production forces of the plants are teamed in a continuing effort to simplify aircraft construction and as the manpower shortage becomes more acute even more intensive efforts must be made to improve labor utilization."

At a dinner meeting closing the conferences, Robert A. Lovett, assistant secretary of war for air, told the manufacturers that more than 50% of projected 1944 army production must be devoted to aircraft and aircraft equipment.

Loening

(Continued from page 21)

across the ocean. Inventors and designers and engineers will improve on this most certainly, however."

As to cost comparisons, Loening said:

"Present cargo airplanes can definitely carry loads at railroad express rates of around 10 cents to 15 cents a ton mile, and make a profit. There isn't much further doubt about that, and when we add the new developments that are certain to come in the course of the next five or 10 years (depending a good deal on how prosperous we are in this country and how much private initiative is allowed to grow), we will run those costs down to three or four cents a ton mile."

"This then will invade the trucking field and equal the LCL freight costs. But it will take a long time to get down to the low costs of shipping by ships."

Regarding the outlook for international air transport, Loening criticized the school of thought proposing a monopoly for Pan American Airways and advocated "a system of real American competition."

"Far better will it be for us, particularly in aviation, to have a slightly less economical air transport system that may cost us a little bit more in subsidies, but that has preserved keen competition—because we will more than recover such added cost by the initiating and developing of clever American ingenuity. This is what will prove to be the secret weapon that will win for us real supremacy in the air."

Of the two other schools of thought on this subject, he said:

"The second is a proposal in which United Air Lines alone joins Pan American and American Export in suggesting the formation of a national company which will be the chosen instrument of the American public. No other group of managers, exploiters, or developers in this field would be allowed to enter it excepting this one group."

"By inviting the air companies of the United States to participate in a stock ownership, it is suggested that this company should be representative of all the American airlines in one unit. I leave you to judge of whether a divergent group of engineering interests, all of whom would have a right to a say-so, could agree on technical details, on choice of equipment, manner of operating routes, choice of personnel, etc., under such a set-up. One can think of many possibilities of chaos in this proposal."

"The third is regulated competition. That is, several companies right along side each other, keenly competing with each other on any routes on which the business warrants it according to the judgment of the governmental authority. Charged first with fostering the soundest development of aviation for the benefit of our taxpayers and then of issuing certificates for airlines, so that the competition will be preserved, but on a basis that will be profitable, such governmental department of the air must have final authority."

Higgins Starts Rolling

Andrew J. Higgins, said last fortnight, after calling on President Roosevelt that his new aircraft plant at New Orleans has started production on giant C-46A cargo planes.

Perfect Reception

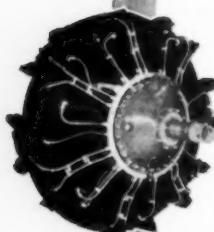


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BREEZE CORPORATIONS, INC., NEWARK, N. J.



Breeze



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Industry Units

(Continued from page 17)

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Renegotiation Arguments Keep 2 Committees Busy

Long hours of laboring over ramifications of the renegotiation law by two committees of the House last fortnight resulted in no major accomplishment but were evidence of the high controversy which exists in Congress over certain aspects of the nation's wartime profit limitation law.

The House Ways and Means subcommittee on renegotiation, headed by Rep. Disney (D., Okla.), met regularly, but reached agreement on only minor changes to the law, such as:

(1) Inclusion of provision for court review, with U. S. Court of Tax Appeals, for contractors opposing the renegotiation terms imposed by a Government Department;

(2) Increase in the exemption from the law for contractors whose annual Government business totals less than \$100,000 to those whose annual business is under \$500,000;

(3) Stipulation that renegotiators allow the same costs as are allowed by tax law;

(4) Disallowance for inordinate salary contracts;

(5) Allowance for full amortization.

Meanwhile House Naval Affairs Committee voted to accept, as a majority report, the report of its Investigating Committee (*American Aviation*, Oct. 1), after individual voting on the numerous recommendations. Chief change to be included in the majority report is a recommendation that exemptions from the renegotiation law be limited to contractors doing under \$100,000 annual Government business and not increased to an exemption of \$500,000, as was recommended by the Investigating Staff.

Renegotiation "after taxes" proposed for the aviation industry by F. A. Gallery was defeated 17 to 5 in the Committee.

A minority Naval Affairs report is expected. There is a strong possibility that the minority group will advocate outright repeal of the law.

Manpower Controls

(Continued from page 18)

duction per employee is now 2½ times greater than on Dec. 7, 1941, in the airframe plants and similar or greater advances have been made by the engine and accessory manufacturers.

To further illustrate, in construction of an attack bomber the work of 100 men now is done by 9 men.

"In terms of cost to taxpayers, an airplane component called a spar cap assembly which cost \$2.12 per pound at the start of the war has been reduced to a cost of 95c per pound by simplification of manufacturing method in order to better utilize labor.

"Engineering, tooling and production forces of the plants are teamed in a continuing effort to simplify aircraft construction and as the manpower shortage becomes more acute even more intensive efforts must be made to improve labor utilization."

At a dinner meeting closing the conferences, Robert A. Lovett, assistant secretary of war for air, told the manufacturers that more than 50% of projected 1944 army production must be devoted to aircraft and aircraft equipment.

Loening

(Continued from page 21)

across the ocean. Inventors and designers and engineers will improve on this most certainly, however."

As to cost comparisons, Loening said:

"Present cargo airplanes can definitely carry loads at railroad express rates of around 10 cents to 15 cents a ton mile, and make a profit. There isn't much further doubt about that, and when we add the new developments that are certain to come in the course of the next five or 10 years (depending a good deal on how prosperous we are in this country and how much private initiative is allowed to grow), we will run those costs down to three or four cents a ton mile."

"This then will invade the trucking field and equal the LCL freight costs. But it will take a long time to get down to the low costs of shipping by ships."

Regarding the outlook for international air transport, Loening criticized the school of thought proposing a monopoly for Pan American Airways and advocated "a system of real American competition."

"Far better will it be for us, particularly in aviation, to have a slightly less economical air transport system that may cost us a little bit more in subsidies, but that has preserved keen competition—because we will more than recover such added cost by the initiating and developing of clever American ingenuity. This is what will prove to be the secret weapon that will win for us real supremacy in the air."

Of the two other schools of thought on this subject, he said:

"The second is a proposal in which United Air Lines alone joins Pan American and American Export in suggesting the formation of a national company which will be the chosen instrument of the American public. No other group of managers, exploiters, or developers in this field would be allowed to enter it excepting this one group."

"By inviting the air companies of the United States to participate in a stock ownership, it is suggested that this company should be representative of all the American airlines in one unit. I leave you to judge of whether a divergent group of engineering interests, all of whom would have a right to a say-so, could agree on technical details, on choice of equipment, manner of operating routes, choice of personnel, etc., under such a set-up. One can think of many possibilities of chaos in this proposal."

"The third is regulated competition. That is, several companies right along side each other, keenly competing with each other on any routes on which the business warrants it according to the judgment of the governmental authority. Charged first with fostering the soundest development of aviation for the benefit of our taxpayers and then of issuing certificates for airlines, so that the competition will be preserved, but on a basis that will be profitable, such governmental department of the air must have final authority."

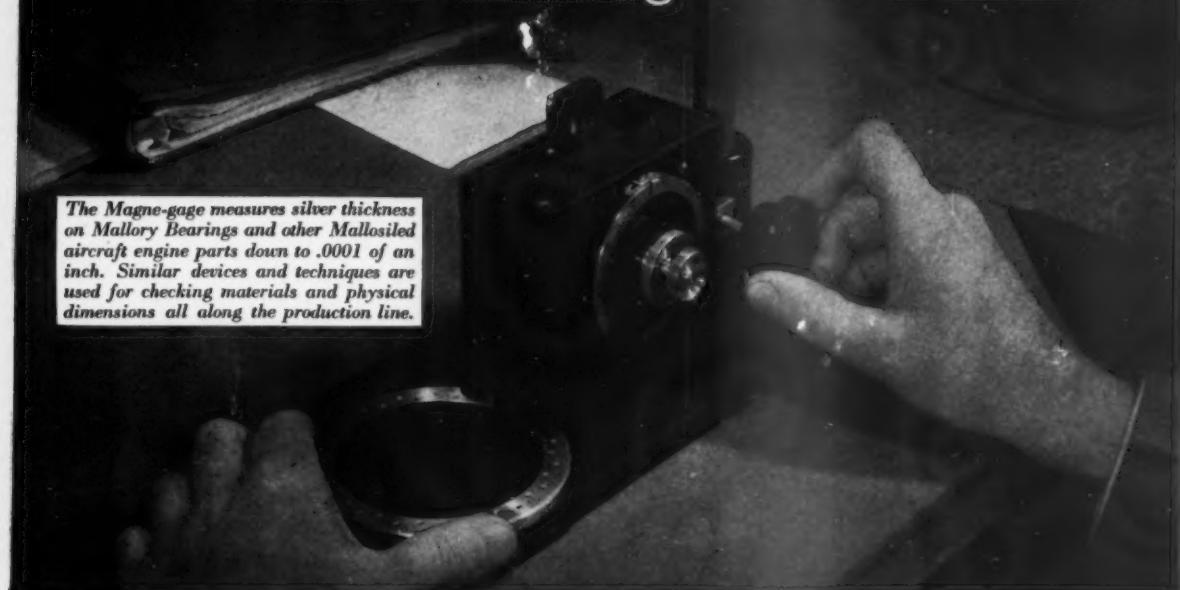
Higgins Starts Rolling

Andrew J. Higgins, said last fortnight after calling on President Roosevelt that his new aircraft plant at New Orleans has started production on giant C-46A cargo planes.

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Prelude to Performance

The Magne-gage measures silver thickness on Mallory Bearings and other Mallosiled aircraft engine parts down to .0001 of an inch. Similar devices and techniques are used for checking materials and physical dimensions all along the production line.



PRECISION is a fundamental characteristic in assuring reliability for Mallory Bearings and other engine parts, produced through the Mallosil Process of bonding rare metals to base metal backings.

Every day, on far-flung battle fronts, Mallory Bearings insure reliable performance for aviation engines under the most difficult conditions. Mallory Bearings and other engine parts silver-surfaced by the versatile Mallosil Process, help keep planes at top efficiency by providing tough, homogeneous, heat-dissipating bearing surfaces that withstand the toughest poundings and fatigue stresses.

Precision accuracy marks every step of Mallory Bearing production. Gages measure dimensional tolerances in split-thousandths...silver thicknesses down to .0001 of an inch. The eagle eye of the "black light" detects microscopic voids or cracks invisible except by fluorescence. Precision annealing detects imperfect bond. From start to finish, the production process is tested by special devices (many of them designed by Mallory) in the hands of skilled inspectors.

Mallory performance has proven the reliability of Mallory Bearings...and the experience gained by Mallory engineers promises great possibilities for the future. Wherever design concerns a high-speed motor, it will pay to investigate the possibilities of Mallory Bearings. Of course, present production is all devoted to War effort.



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Burden Calls for Teamwork Between Federal and State Groups in Airport Planning

Comprehensive and farsighted planning, with proper integration of air-surface transport routes and team work between Federal, State and local agencies are the common denominators for success in the building of airports in the future, declared William A. M. Burden, special aviation assistant to the Secretary of Commerce, in an informal speech before the Urban Planning Conference of John Hopkins University, Baltimore, Oct. 9.

Burden said it was necessary to first determine what is the most desirable airport pattern for the city. Once that is decided, a concerted, intelligent effort should be made to approximate that pattern as closely as trends in aviation, economics and topography will permit.

"Plan your urban system of airports now, flexible as it should be to care for future needs and acquire today strategically located reserves of open land suitable for airport use," Burden advised his audience.

"How well you specialists plan for the future, in this transitional period of aviation's great expansion, will vitally affect for generations American aviation and the welfare of our towns and of our cities," he said.

Germany Can Be 'Bombed Out' In 4 Months—Downey

Germany could be bombed out of the war "in four months", Sen. Sheridan Downey (D., Calif.) asserted on the Senate floor last fortnight. He then introduced a resolution asking a new study by the Military and Naval Affairs Committees into the effect of all-out air war against the Axis.

These committees should hear from Gen. Arnold and other "air war experts" instead of the Army and Navy high command which testified recently before Military Affairs in connection with the drafting of fathers, Downey declared.

Downey quoted on "undeniable authority" that Germany is weakening so fast and our airpower is growing so rapidly that efficient use of our bombers and fighters will reduce the Nazis to "quick surrender or terrible destruction." He said that confidential information convinces him that U. S. plane production exceeds that of Germany "five times over and that within four months it will probably be ten times as great." Measured to cost of production, he added, less than 30 per cent of America's military power has been in aircraft.

"Yet, of all the injury inflicted on our enemies, more than 90 per cent has been accomplished by bombers and fighters," he added.

He said that from the beginning of the history of aviation the common sense of the average man has comprehended its possibilities, but that "the stereotyped Army mind is unable to grasp the vital significance of coming airpower." Even today air-minded officers have, in the face of "opposition of their superiors", developed a "transcendent airpower" which is becoming the most powerful on earth, he added.

Wichita

(Continued from page 22)

owner could afford to carry insurance. (First item to reduce cost of flying of private owner.)

2. Survey of all private fields which will be available to the private flyer in the postwar era. Set up suggestions, plans, and ideas, as to how owner of an airport may approach the postwar era.

(He suggests, and Cessna officials also believe, small airports should hold out a few social aspects just as golf clubs do to their members, incorporating club-room social functions for hangaring spots.)

3. Sell banks on carrying finance papers at a reasonable rate so that the man who has to buy an airplane on time could know purchase of an airplane would not involve exorbitant interest and carrying charges.

4. Encourage responsible business men to enter the aviation field.

Fears a 'Lapse'

Unless these conditions are met, Woodbury believes, the light plane industry will lapse back to pre-war levels when 7,000 airplanes were sold to individual owners.

"Our field for sales does not lie in the flying schools or in the training end, for this is a limited field. As I see it, our possibility for volume sales is to the private flyer who can buy an airplane at a reasonable cost, who can hangar it in a convenient location, and who can afford to fly it as many hours as he desires," Woodbury said.

Woodbury also believes the government will continue contracts after the war; that it would be "catastrophic" to cut them off entirely; and that aircraft will be used for certain policing and other obvious needs.

Although none believes aircraft production will approach wartime production, consensus is that competition from converted automobile and other plants will not be great, due to past experiences in the industry, and the fact that aircraft production is peculiar to itself.

Mrs. Beech Active

Mrs. Walter H. Beech, wife of the Beechcraft president, active in the factory daily, suggested that some factories may have to turn to manufacturing other items, in addition to planes, to use capacity and equipment. Present Beech plans are to continue building the two ships, which were in the \$25,000 class prior to war, and "we expect to continue selling them to the same substantial and satisfied customers we had before war," Mrs. Beech said.

What will happen to employees? That question recurs time and again in discussions of the future. Realist J. Earl Schaefer, vice president of Boeing and in charge of the Wichita subsidiary plant for the Seattle concern, opined: "I don't think the majority of employees expect to stay in these plants. Whenever I go through the Boeing plants here in Wichita, on days when newspaper accounts have been particularly optimistic, I can see the result. Men who have come in to do this patriotic wartime job inquire if the time has come to contact their former employer."

Mr. Schaefer reasoned: Boeing runs now

AAF Sets Up Personnel Redistribution Center For Returning Veterans

A new Personnel Redistribution Center has been set up by the Army Air Forces to consider the individual military futures of officers and enlisted men who return from overseas duty. The project has been established by Gen. H. H. Arnold, commanding general of the AAF, to ensure proper re-assignment of air crewmen.

The redistribution will take place at three centers: two already selected, at Atlantic City, N. J. and Miami Beach, Fla.; the third to be located on the Pacific coast. The general headquarters will be at Atlantic City. Three rest camps are to be run, one at Lake Lure, N. C., one at Castle Hot Springs, Ariz. and a third at a location to be announced soon.

Gen. Arnold expects veterans of overseas service to be able to relieve staff, administrative, and technical officers and instructors who want active foreign service. "The cream of American youth" is in the AAF and they deserve rest and assistance in readjustment, says a War Department announcement. The physical surroundings of the centers were carefully considered to provide adequate recreational facilities.

Each man will have a furlough at home before redistribution is started. He will receive any medical, dental, or personal attention that he requires. He will be assigned to general duty, further overseas combat duty, further technical training, or appropriate duties in limited service.

"No matter where the veteran AAF officer or enlisted man winds up, it is Gen. Arnold's aim that it will be where he will do the Army Air Forces and himself the most good, and where he will be happiest," the announcement adds.

on three shifts. Quite naturally it follows at war's end, there will be only one shift, as there was in peacetime, thus probably two-thirds of the employees, who are those doing only temporary jobs, anticipate going to their homes and returning to their former employment.

Among factors Mr. Schaefer deems important in looking to postwar planning are:

1. Economy after the war, and forces which play on the type economy which we will have.
2. Attitude and help of labor leaders looking to post war plans.
3. Revenue gathered by aircraft industries.
4. Allowance of private interests to solve the questions.

Foresees Big Planes

Mr. Schaefer in looking to the future foresees unquestionably larger ships and ships which will carry more passengers. He feels the government will not cut off orders immediately and predicts a future for air express and passenger service, but questions because of the uncertain economy following war, how many individuals will be able to afford private ships.

One thing seems certain:

None of the Wichita leaders expects to shut up shop come peace and none is counting on government contracts alone to sustain the aircraft industry.

PAA Opposes U. S. Stop for Panagra; Favors Interchange

Extension Would be Solution to Panagra's 'Deadend Line'—Roig

PAN American-Grace Airways, through W. R. Grace & Co., continued its fight last fortnight for a route to the United States, against the bitter opposition of Pan American Airways, which claimed that such a route would be "disastrous" to PAA's Latin American operations.

At a CAB hearing in New York before Examiner Francis W. Brown, Juan T. Trippe, PAA president, revealed that his company is willing to enter an equipment interchange agreement with Panagra for operations between the U. S. and the Canal Zone and possibly on to the west coast of South America. He also surprised many observers by going on record as favoring a three-way interchange, bringing Eastern Air Lines into the South American picture. Such an interchange, he said, is "entirely practicable and should be considered" at such time as suitable equipment is available.

Panagra is not taking part in the hearing, which is one of the most bitterly-fought proceedings in CAB history. W. R. Grace filed the application for Panagra after PAA directors on the Panagra board (50% PAA, 50% Grace) refused to permit the company to file in its own name.

Attend Opening of AA's Toronto Office



Among those present at the opening of American Airlines new office in Toronto were, left to right—W. G. Courtney, district traffic manager, Trans-Canada Air Lines; F. J. Robinson, American's Canadian traffic manager; Charles A. Bollard, AA director of foreign travel; R. McDonald, AA station manager in Toronto; Willis G. Lipscomb, AA general traffic manager; E. L. Smith, general traffic manager, Canadian Pacific Air Lines; and H. J. Lyall, AA eastern traffic manager.

Highlights of the hearing to date have been the direct testimony and cross-examination of Harold J. Roig, Panagra president, and Trippe.

Any interchange agreement such as that proposed by Trippe would probably be patterned after the arrangement between United Air Lines and Western Air Express, approved by CAB two years ago. A Panagra plane originating in South America could operate through to Miami—with a PAA crew—over the PAA route. Southbound, a PAA plane might continue over the Panagra route with a Panagra crew. Passengers would not be required to change planes.

Roig strongly urged a U. S. terminal for his company. "All of Pan American Airways' divisions come to a terminal in the United States," he asserted. "They recently secured permission for their little subsidiary—I will cut out 'little'—their subsidiary in Cuba, to come through. They are actively pressing for their local company, Panair do Brasil, to come through. Within the last few days Braniff Airways and Eastern Air Lines have filed applications to go to South America and serve some of our ports, not starting at Balboa, not even starting at Miami, but starting at interior points which they now serve. TACA, a foreign company, a party to this proceeding, has managed somehow to get a service from Balboa to Miami. When I came from Miami the other day, the TACA passengers were being discharged just the same as the rest of us. After the war when foreign lines begin operating, they will come to the U. S. They will come to a terminal here, and I can't for the life of me see any reason

why there is anything particular and peculiar about Panagra's position which dictates that it must always be a deadend line stopping 1,200 miles short of its real destination.

"Now, the question of the adequacy or inadequacy of the connecting service has been discussed at great length . . . but to me the difficulty is that no connecting service, however well maintained, can possibly provide the points of advantage which have already been testified to, which Panagra would derive from coming through itself.

"One of the strongest assets of commercial aviation is the ability to carry its traffic from origin to destination. Up to now it has been considered advisable that a foreign line should stop at some gateway to the U. S., although Braniff's and Eastern's applications are certainly breaking that theory down, but there is no theory on which a great international trunk line should be stopped short of the U. S. when it is an American line and when it was established and is carried on largely and primarily for the purpose of joining up the countries which it serves in South America with the U. S."

Traces History

Roig gave an extensive history of Panagra, tracing it through from its formation to the present day. Comparing 1933 with 1943, he said that route mileage in the latter year was 8,800 compared with 4,425 in the former; round trips are 7 weekly against 2; commercial revenues \$4,788,000 or 67% of total, against \$426,000 or 21% of total (a 1,022% increase). Panagra now has net worth exclusive of goodwill of \$3,990,000. Pan American Airways directors on the board of Panagra failed to attend a directors' meeting called by Roig to discuss a U. S. terminal for Panagra, Roig claimed. PAA and W. R. Grace & Co. have equal representation on the Panagra board. A U. S. terminal would be advantageous to Panagra and its operations from the standpoint of control of bookings on Panagra planes in favor of through traffic, he said.

John Cahill, attorney for Grace, asked Roig: "How about the threat of pseudo foreign companies operating under foreign flags for the purpose of avoiding the regulation of the CAB? Would a through service to the U. S. be of help to Panagra against that kind of situation?"

Roig answered: "Well, I think so very definitely. As aviation gets on a self-sustaining basis the possibility of American capital organizing aviation companies under foreign laws in order to avoid the requirements of the American law, becomes a very real one. Panagra, as it is operated today, except for the question of subsidy, need not be an American company at all. We could be organized along the laws of any country on our route and operate entirely free of American law. Obviously, that is not a thing we have even remotely considered or would ever consider, but we are threatened with the possibility that other American companies may be formed under foreign flags in order to avoid requirements of the CAB and then get permission as foreign companies to come through to the U. S. competing with us along our route and Pan American along theirs, for that matter with a very definite handicap—a handicap against Panagra or Pan American, I mean."

Cahill also asked Roig: "Is it a fair (Turn to page 52)



THERE IS A NORTHWEST PASSAGE

- IN THE AIR !

A legend persists in the Northland that the ghost of Henry Hudson still haunts the icy waters where, over 300 years ago, he perished in his search for the fabled Northwest Passage.

Today such a passage is a reality. Great, silvery ships of the air skim those northern spaces... and the air routes pioneered by companies now comprising Canadian Pacific Air Lines have opened a whole "New Canada"... beyond the fringe of surface transport.

Just now, war traffic wings these northern air lanes... tomorrow they will tap great new resources... help bind freedom-loving nations closer by short, roof-of-the-world air routes.



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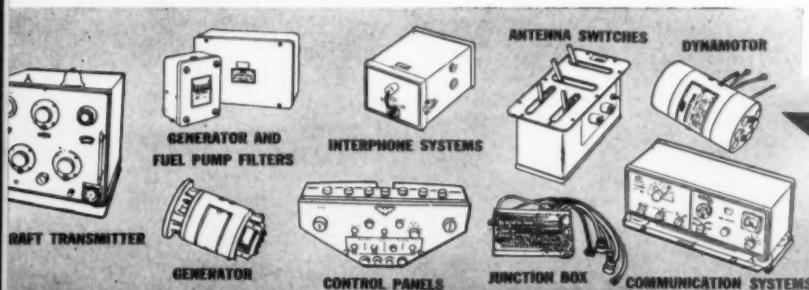
THE WINGS OF THE WORLD'S GREATEST TRAVEL SYSTEM



OUTWITTING THE WOLF PACK

Sworn foe of the wolf pack is the Vega Ventura bomber, known to the Navy as the PV-1. This new and deadly submarine weapon has only recently gone into active duty, but it has already proved itself outstanding as an effective convoy guardian.

Helping to speed the deadly "ash cans" and torpedoes to enemy subs is Bendix Aviation, Ltd., Interphone Equipment which flies aboard the PV-1 as part of its Invisible Crew. With the life or death of Atlantic convoys in the balance, these radio controls must function with precision and reliability . . . always. *Bendix Aviation, Ltd., North Hollywood, California. Sales Engineering Offices in St. Louis, Dayton and New York City.*



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Airlines Need Special Policy for Depreciation—Westwood

(This article, the editors believe, will prove of more than passing interest not only to airline officials but also to manufacturers and in financial circles. It was prepared for AMERICAN AVIATION by Howard C. Westwood, attorney for the Air Transport Association and an authority in the field of aviation law.—Ed. Note)

By H. C. WESTWOOD

A MONUMENTAL report on depreciation in public utility regulation, just issued by a committee of the National Association of Railroad and Utility Commissioners,¹ cannot be read without remarking that the problems of air transportation really are special.

In the first place, this industry probably will never go through the extraordinary conflict of theory, policy, and mumbo-jumbo which has characterized the elaboration of the administrative and judicial law of depreciation in other utility fields. The concept of depreciation is peculiarly an incident of the capitalistic economy—i.e., an economy in which substantial aggregations of relatively long-life goods are employed in the production of other goods. The railroads were born in the very early days of that economy. Thus they appear to have grown up before well-formulated and rational depreciation principles were firmly established. Much the same thing is true of a number of other utilities.² Apparently it remains to this late year in utility history for an authoritative statement of some rather obvious points about depreciation—points which we in the air transport industry have naively accepted as self-evident. It makes an air transport lawyer moan over lost opportunities for spinning untenable theories and having courts, astonishingly enough, accept them—to the immediate profit of his clients.

In the second place, in this industry depreciation is a problem of quite different significance from that in other industries. This is due to the remarkably lower ratio of capital investment to gross revenue than in other utilities. The report gives these interesting figures on book value of plant per dollar of gross revenue in 1940:

Electric utility industry	\$5.15
Telephone industry	3.98
Manufactured gas industry	5.22
Class I railroads	4.60

The contrast with manufacturing is illustrated by equivalent figures for General Motors Corporation and the United States

Rubber Company, which were \$0.45 and \$0.84 respectively.³

The ratio for domestic airlines for 1940 was, we understand, around \$0.60. And as we learn to use equipment more intensively, this ratio may fall lower still.

At first blush these figures might suggest that depreciation policies are of relatively less importance to the air carriers than to other utilities. To a degree, this is doubtless the case. But in one respect, at least, the figures emphasize the peculiar importance of depreciation policies adopted for this industry. For if the regulatory body were to persist in relating allowable net income to a depreciated rate base some absurd results can occur more readily for air carriers than for other utilities. The rate base is so much narrower to begin with—and with prevailing rapid rates of depreciation can be whittled down so fast—that an air carrier which re-equips itself entirely in one or two years can quite possibly find that it is doing the same sized job of public service each year for five years with a sharply diminishing income—assuming that the depreciated rate base and the profit are kept in a more or less fixed relationship. The possibility of such an outlandish situation is not academic—it is very real, as experience in the industry has shown.

Danger of Fluctuations

Another aspect of the same thing is the danger of violent up and down fluctuations in the rate base for a single carrier from one year to the next, or crazy differences in the rate base as between carriers similarly situated at the same time. The most fortuitous circumstances can result in a rate base for one air carrier which is a ridiculously low fraction of the rate base for another air carrier operating between the same points and carrying the same volume of traffic.

These considerations suggest that some bold mind would do well to think seriously about emancipating this industry from slavish adherence to the mechanical formula that there should be generated for each air carrier a certain percentage of return upon the depreciated cost of its capital facilities. One day—and perhaps it is not far distant—the application of that formula could have startling consequences, could send passenger and express rates scurrying first one way and then another, and could make the famous old pepper-corn seem a king's ransom in comparison with the payment for carrying the mail with which some carrier might sometime be blessed.

Another special characteristic of the air transport industry which is forcibly brought to mind in reading this report is the vulnerability of its equipment to unexpected obsolescence. One of the main points made by the report is the need to determine depreciation rates in the light of exact statistics and careful analysis concerning actual experience with similar items of property in the past. While there is recognition of the fact that past experience is after all only probative of



Howard C. Westwood

what to expect in the future, and is not conclusive, it is the statistical record of the past which is urged as the principal reliance. The report makes its point thus: "New inventions and improvements are not suddenly substituted for old property. There are thousands of Type L-14 meters designed in 1914 still in service."

For the older utilities this is doubtless quite true. But in the case of air transportation, its truth is much more open to question. Even if there were experience with sufficiently large numbers of a given item of equipment to provide a statistical basis for estimating future service life, continual inventions, some of them of a relatively revolutionary character, make past experience of quite doubtful value. We have heard arguments in support of a given life-span for depreciating aircraft which have been buttressed by reference to past experience with successive generations of aircraft. But it is probable that the connection is purely fortuitous.

Even in the case of facilities where there is long experience in other fields, such as buildings, the requirements of air transportation are such as to throw doubt on the value of the past. We have all seen the needs respecting air mail field post offices, for instance, change overnight and with very little warning—and in circumstances where experience with similar buildings would dictate a depreciation rate quite inconsistent with the event. An especially acute problem is presented in international air transportation: the uncertainties respecting the life of licenses and franchises issued by other governments, and other hazards, can render suddenly useless a facility to which ordinary experience would attribute a long and fruitful life.

In this industry we can expect that for a long time an informed guess will often be more reliable than a statistical analysis of what has happened.

And this brings up another matter. The report makes much of its thesis that depreciation is a cost, that depreciation

¹ See REPORT, p. 109.

(Turn to next page)

² See REPORT, p. 128.

TRANSPORT

accounting should be the recording of the consumption of service life. In spots, repetition of this theme is a bit monotonous. While one cannot particularly quarrel with the point, one does have the feeling that the proposition must be applied with some care to the regulation of the air transport industry.

For instance: All will agree that technological development in this industry is desirable, and that it is in the nation's interest that it be hastened. If a regulatory agency were to lop off a year from what would otherwise be the generally accepted service life for depreciation purposes in order to put management in a position to buy new advanced types of aircraft sooner, rather than later, and were to accompany that action with pressure upon management to change to new types at an earlier date than it might otherwise be inclined to, that would be consistent with a sound national policy. But such action is not suggested by thinking of depreciation solely in terms of recording a cost.

Ability to Replace

The report emphasizes that depreciation is not to be regarded as a means for financing replacements. What is really meant is that depreciation should not return to the owner more than the original cost of the property depreciated and that it does not imply a fund earmarked for use in financing replacements. But one can admit this and still insist that, in the case of property which will be replaced, depreciation policies may properly be influenced by considerations relating to ability to replace.

As a matter of fact, in most cases the business man probably thinks of depreciation in terms of making possible and facilitating replacement just as much as in terms of recouping the cost of the property in question. The report itself recognizes this, in a way, when it quotes a passage from a writer of a hundred years ago as setting forth the true aspects of depreciation—and the passage quoted speaks of the need to make allowance from current income in order to provide for the replacement of the property which produces the income.⁵

Keep Factories Busy

The function of airline purchases in aiding the maintenance of a sound aircraft manufacturing industry is widely recognized. A good case can be made in support of a program of airline aircraft purchases which would involve replacing old aircraft with new—even though the old is not worn out and even though the new represents no obsoleting advance over the old—simply in order to keep factories supplied with a constant demand for certain types of aircraft and to assure that they are tooled up at all times to a certain minimum extent. Were such a policy adopted, it would be necessary to adjust the rate of depreciation in order to make it possible.

In other words, while, in a sense, depreciation may not be a means for financing replacements, the depreciation policy and the replacement policy of a given company or industry are obviously closely connected. Depreciation policy does, as a practical matter, affect ability to carry out

⁵ See REPORT, p. 10.

CAB Calendar

- OCT. 15—TWA's hearing on application to make intermediate stop at Lancaster, Pa. (Docket 624).
OCT. 20—Pre-hearing conference on applications of Eastern, Delta, State Airlines & Pennsylvania Central, involving routes in the Piedmont region. (Docket 570 et al.).
OCT. 26—Pre-hearing conference on applications of Western, involving routes in the Denver area. (Docket 519 et al.).
OCT. 29—Pre-hearing conference of application of Mid-Continent, involving routes in Tulsa-New Orleans area. (Docket 651 et al.).
NOV. 1—Adjourned hearing on "control" feature of Northeast's application in the New York-Boston cases. (Docket 13-401-B-1).
NOV. 1—Hearing on American Airlines' application to include Akron as a stop on its Route 22. (Docket 573).

a replacement policy; and the replacement policy may determine what ought to be done about depreciation. In the case of the air transport industry the special public importance of its relationship to the aircraft manufacturing industry makes it particularly necessary that, where there is a question of choosing between different depreciation policies, the choice be moved just as much by considering what will best facilitate the securing of replacements as by the rather arid aim of accurately recording a cost.

Industry's Need Peculiar

There is still another question of depreciation policy respecting which this industry's needs are peculiar and which is of special importance at this time. This is the question whether depreciation allowances should not be accelerated during a period of abnormally high profits. Among the means for preparing the air transport industry against stormy days ahead, would it not be prudent to allow a greater amount of depreciation rather than to curtail net income by lowering mail pay?

Throughout the report there is the assumption that depreciation is to be taken according to a given formula—straight line, sinking fund, etc.—without variation save where it is found that adjustments are necessary in order to correct for substantial errors in estimating service life. Especially in the case of air carriers, and in view of the present state of the industry and its prospects, there seems no particular reason to be so wedded to a formula. If earnings ascend sharply because of swollen load factors, and if there is a reasonable probability that in a year or so days will not be so balmy, why not be prudent and make an extra allowance for depreciation now rather than cut income?

After all, depreciation allowances are spread over a period of time—which, it is hoped, will coincide with service life—as a matter of convenience and with a view

to seeking a constant expense level which a business can meet in an orderly way. The expense occurs when the item of property is purchased. If there were reasonably constant purchases of like items from year to year, there would be no particular point in depreciating the item—it might just as well be treated as an operating expense when the property is acquired. As the report points out, such treatment is regularly afforded to certain items of telephone company property where "the cost involved is fairly constant from month to month and is not large enough to distort comparisons of operating expenses."⁶ In other words, where the considerations of business policy which make depreciation desirable are absent, there is no reason for treating a property as depreciable, however long its life may be. There is no virtue in depreciating just for the fun of it.

Larger Rate Justified

Similarly, there is no reason that, midway the life of a property being depreciated, expense should not be saddled for a time with a larger rate of depreciation if business conditions make that a prudent course—that is, if income is inflated and if times ahead do not appear so rosy. There is no virtue in depreciating at a constant rate just for the fun of it.

The same question is put somewhat differently in terms of a problem which the air carriers may be about to face. Suppose relaxation of present restrictions were to permit the carriers to buy a number of new planes. Present cost levels, plus special costs that might have to be incurred in connection with making suitable for passenger use a plane turned out on a production line designed for military purposes, might very well make the price of the planes abnormally high—might, indeed, present the carriers with a situation which would never again be duplicated. This situation would be, peculiarly, an incident of the very circumstances which make present load factors and income levels so high. Would it not be most appropriate that, instead of cutting the carriers' income, the depreciation allowance for such planes should be heavily weighted during the first year of their lives in order to throw the major burden of that expense into this income period?⁷

Conclusion

To conclude: The report of the N. A. R. U. C. Committee should bear the caveat that it is written from the point of view of the older utilities. Someone ought to write a report on air carrier depreciation. In it the writer should look to the policies and purposes with which the concept of depreciation is concerned, see how those policies and purposes can best be effected in the case of the air carriers, and then work out a treatment of depreciation best suited to the air transport industry. Maybe someday the Airline Finance and Accounting Conference can do that job.

⁶ See REPORT, p. 44-45. See also the interesting treatment of telegraph messenger uniforms. *Idem*, p. 45. And very substantial amounts of railroad plant are still not depreciated. *Idem*, pp. 45-46.

⁷ Whether treatment of depreciation for tax purposes on a basis different from that for regulatory purposes would measurably defeat the objective of the course suggested is a question, of course.



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Boeing Flying Fortress



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OVER HERE: On a production line. A part is gaged. Shaved another ten-thousandth. Gaged again—to standard. Precision over here begets precision over there. Diligence and craftsmanship of the men who make our planes must ever be a vital counterpart of the skill and daring of our sons who fly them. Pesco Products Co., 11610 Euclid Avenue, Cleveland 6, Ohio, (Division Borg-Warner).

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goes Maguchi to the bottom of the sea. America's enemies are going down in history but her future still looks up and

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United's Control of LAMSA Approved in Important Decision

PURCHASE BY United Air Lines Transport Corp. of 3,750 of the 5,000 shares of capital stock of Lineas Aereas Mineras, S. A. of Mexico from Gordon S. Barry, vice president, director and general manager of LAMSA for the price of \$145,750 has been approved, under certain limitations, by the Civil Aeronautics Board.

Considerable importance is attached to the decision, which may serve as a pattern for other deals.

The acquisition of control was approved under the following conditions:

"(1) That United shall submit to the Board semi-annual financial and operations reports of LAMSA in such form as shall be prescribed by the Board; (2) That this approval shall cease to be effective if LAMSA extends its operations beyond the borders of Mexico, unless prior to the inauguration of such extension, United shall apply for and secure approval by the Board of the continuance of the control of LAMSA as so extended."

CAB's action follows the recommendation of CAB Examiner J. Francis Reilly and public counsel. LAMSA was incorporated Aug. 27, 1934. It operates over the following routes: between Mexico City and Ciudad Juarez, via San Luis Potosi, Torreon, Parral and Chihuahua; between Mazatlan and Torreon, via Durango; between Mazatlan and Tayoltita; between Chihuahua and Nogales, via Cananea. The overall mileage is 1,675.

LAMSA's profit and loss statements for Jan. 1, 1938 to March 31, 1943, reflect a loss of 273,328 pesos, the Board opinion states. The company estimated it would earn a profit of approximately 80,000 pesos in 1943 and 128,000 pesos in 1944. Book value of LAMSA was given as approximately \$32,000.

This book value, according to testimony of United's president, represented the physical assets and LAMSA and the balance, or \$113,750 is allocable to LAMSA's franchises and good will. The Board opinion states that United's president was particularly impressed with the tremendous good will which LAMSA had created during more than eight years of operation, principally because of its remarkable safety record.

"He is confident that this good will is permanent and would not be affected by any changes which might occur in the management of the company," the Board opinion states.

Barry testified, according to the opinion, that during the past five years he had had an opportunity to sell part of his stock. One of these was an offer of \$250,000 on behalf of Lufthansa for a 51% stock interest in LAMSA. The other offers were greatly in excess of the price being paid by United and for a smaller part of Barry's LAMSA stock, the opinion states. The prospective buyers either were unable to complete the transaction or lacked practical airline experience so that Barry was not interested in selling his stock to them.

The Board opinion states: "In view of the foregoing facts and considerations, the Board finds that the \$145,750 purchase price to be paid by United for 3,750 shares of LAMSA's stock is not disproportionate to the values actually attached to the

property and business of LAMSA, including the operating rights. No finders' fees or commissions of any kind were paid, or will be paid, to anyone, either by Barry, LAMSA, or United.

"The record shows that United's participation in LAMSA will have no harmful effects on United's financial position, its personnel, equipment situation, domestic air transportation service, or on its postwar plans. The consolidated balance sheet of United as of March 31, 1943, showed total assets of \$26,971,547. Consolidated current liabilities amounted as at that date to \$8,420,673. Deferred credits amounted to \$370,403. A reserve for post-war readjustments amounted to \$1,000,000. In the capital stock and surplus account, the capital stock amounted to \$7,502,255, the paid-in surplus to \$6,373,378, and the earned surplus to \$3,304,837. As a result of its operations from Jan. 1 to March 31, 1943, United had made a net profit of \$982,760.

"At least in the immediate future, none of United's flying equipment will be transferred to LAMSA, and the only personnel who might be made available to LAMSA would be supervisory officials, who presumably could be recalled to the United States on short notice.

Service to Cayenne Resumed

Pan American Airways announces that daily air service with landplanes to Cayenne, capital of French Guiana, which was temporarily suspended due to unusually heavy rains, has been resumed.

EAL Creates New Position For Research and Planning

Hugh Knowlton, formerly vice president in charge of the communications division of the U. S. Commercial Co., a subsidiary of the Reconstruction Finance Corp., has been appointed director of research and post-war planning for Eastern Air Lines. Knowlton served two years as a Field Artillery lieutenant in World War I.

After practicing law for five years in New York City, he entered the banking business as a member of the firm of Kuhn, Loeb & Co. He entered government service in 1942. He has been a director of EAL since the company's organization in 1938. Eastern's plans for expansion under Knowlton's direction include establishment of new routes in both national and international fields.

Cunard Enters Aviation

Cunard Steamship Co., whose subsidiary, Cunard-White Star Co., recently was granted stockholder permission to engage in air service, announces that its stockholders have voted to amend the company's articles of incorporation to permit operation of air transport service. Directors are now in a position to build, buy, or charter planes to put Cunard into competition for postwar air routes.

CAL's Division Superintendent Celebrates



Lewis K. Fahrenkamp, division superintendent of Continental Air Lines, celebrated the anniversary of his 14th year in aviation recently by conducting his daily class in elementary airlines operations. A photographer surprised the "professor" by attending class and snapping the above picture. Left to right—Fahrenkamp, Phil Howard, Barbara Stitt, Thomas Dempsey, Betty Butler, Helen Freeborn, J. O. O'Connor, L. V. Gardiner, and W. C. Curto, all CAL personnel.

New York-Boston Route Hearings Featured by Post Office Figures

FIFTEEN letters from the Post Office Department setting forth what it believes to be the airmail needs of certain New England towns affected by the route applications in the New York-Boston cases were made a part of the record on the closing day of the hearing in Washington Sept. 30.

Roy M. Martin, superintendent of airmail for the post office department, offered the letters in evidence before CAB Examiner Thomas L. Wrenn. The letters were signed by Smith W. Purdum, second assistant postmaster general.

Accompanying each of the letters was a chart showing mail dispatches at several of the towns listed in the new route requests. In the case of Danbury, Mass., the post office found no evidence that direct air service would be warranted. It held that some advantage to Fall River and New Bedford would accrue to the postal service if a joint stop for these two towns could be made on American Air Lines, Inc., route 18. As to Lawrence, Mass., the post office found that no particular advantage would accrue to the postal service through this stop although Purdum's letter states there would be no appreciable cost to the post office or other disadvantage if Lawrence is included as an intermediate point on Northeast Airlines, Inc., route 27.

Due to the proximity of Providence to Boston and the frequent fast train service in the area, the post office department was

unable to find any material advantage to the postal service in providing direct service at Attleboro. However, it interposed no objection if it is included on American's route 18. The same viewpoint is held with reference to Bedford.

The Post Office Department said it would have no objection if the Board felt one or more schedules on Route 18 would include Bridgeport as a stop. It further held that direct air mail service was not required at Meridian, Conn. With reference to New Bedford, previously mentioned in connection with joint service with Fall River, the department said a stop at this point by a new coastal route is indicated as necessary only if found otherwise required by the Board. It held that due to its proximity to Hartford, present postal service is fully adequate to New Britain, Conn.

In the case of New Haven, Conn., the department felt that this point does not need additional airmail facilities as it is already an authorized point on Route 18. If certain schedules on Route 18 be authorized to serve Fall River and New Bedford, the department felt a stop at New London would appear feasible if the Board felt the town should have direct air service.

Because Northeast's route 27 passes almost over Pittsfield, the post office is of the opinion this city might be included on that route when operations are resumed, largely in view of the city's size,

importance and location. With reference to Southampton, N. Y., the post office department was not able to find any postal condition there which indicated the need for direct air service.

It held that because Stamford, Conn., is but 50 minutes by rail from downtown New York, no direct air service by a single route would materially improve the service presently afforded by the multiplicity of routes available at the LaGuardia Airport.

Because of its proximity to Boston, direct airmail service to Taunton would depend entirely on the establishment of schedules more favorable than presently available by way of Boston. The letter said: "It would appear that one or more stops by trips operated over Route 18 possibly by the same plane route via Fall River-New Bedford would adequately serve this town's postal needs."

With reference to Waterbury, the post office held it was not clear that direct air service would affect any improvement in existing service unless air schedules were exactly timed to effect such an improvement. No objection would be interposed to routing one or more trips on route 18 serving Hartford to stop at Waterbury.

Before the Post Office Department submitted these letters, Alvin P. Adams, president of Seaboard Airways, Inc., had testified that if the Board approved its application for a route between New York and Boston it would develop a considerable cargo business not now handled by any surface transport. He testified his company proposed to transport cargo express at 20c a ton mile between Boston and Miami and Boston and New Orleans.

Adams testified the New York-Boston leg would fit in well in the company's plan for its regional system and would make the entire operation considerably more profitable.

In answer to questions by Leslie Craven, company counsel, Adams said that air-cargo potentialities had been canvassed in both Boston and New York. He said 100 representative firms and 30 shippers in the Boston area had indicated they would use air transport to a considerable degree at the 20c a ton mile rate. He said the new business, would come largely from the fishing industry. Because of the perishable nature of fish, the industry is definitely restricted by the distance it can ship its product, Adams stated. Return cargoes of both fish, fresh fruits and vegetables would balance the operations, he contended. Many manufacturers also indicated they would use air transport at the 20c rate, Adams claimed. He said one New York newspaper indicated it would send 12,000 pounds of newspapers from New York to Washington daily and an additional 3,000 pounds to southern cities.

Operations from Boston south, he predicted, would show a loss of \$202,000 the first year and a profit of \$1,010,000 the second year. A similar operation, with New York as the north terminal, would show a \$574,000 loss the 1st year and a \$353,000 profit the second year.

To permit Northeast Airlines, Inc., to take action which it believed would satisfy the Board with reference to the "Railroad Control" feature of its case, Examiner Wrenn agreed to a postponement until Nov. 1. Previously the Board had held that Northeast was under the control of the railroads.

Travel Agents in Air Transport Business



These three travel experts, formerly associated with well known travel bureaus, are now working for American Airlines. They are, left to right—Frank Beach, who was with Frank Tours in New York and Chicago and is now New England superintendent of air mail, express, and freight for American in Boston; T. P. Gould formerly with Flick-Gould Travel Bureau, Syracuse, now AA's manager of reservations and ticket offices; and Joseph E. Terry, former manager of the domestic travel department of Raymond-Whitcomb, who is field assistant to American's general traffic manager.

TIME TABLE BOMBING



With reliable Hyaromatics out in front, mighty Liberators and Flying Fortresses are relentlessly pursuing their planned course on schedule —operating their deadly shuttle service across Europe.

HAMILTON STANDARD PROPELLERS
EAST HARTFORD, CONNECTICUT
ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

LET'S CLEAR THE AIR...

*A statement on the subject of
postwar International Air Service
by W. H. Coverdale, President, American Export Airlines*

WHEN TOMORROW COMES and the war is ended, this nation will need—and quickly—air transport services between our country and practically all of the other nations of the civilized world.

Because we are Americans, we naturally think first of American air transport services flying American-built planes, manned by American crews—services directed and developed by American enterprise—services operated as the finest and swiftest and safest and best of all the air transport services provided by any nation of the world.

But as cooperative citizens of a new world, we do not want more than our share of this global air transport business—but we do feel entitled to our full share!



The planning and preparing for this postwar activity is one of the foremost problems facing this country and the world in general. Like all problems involving international relations, it has been and will continue to be an argumentative subject. At present it is one of the most momentous projects under discussion by governments, by transportation groups, and by business in general, both at home and abroad. As a result, various American air transportation groups from time to time have gone on record in regard to how this government should handle this problem. But there is still confusion.

We of American Export Airlines believe that the following open statement will add to the public under-

standing, and at the same time clarify our position—in other words, help "clear the air."

WHAT HAS AMERICA TO OFFER?

So far as aviation is concerned, the answer is, America has everything—and in abundance.

—operating knowledge and experience in management of commercial air transport, greater and broader than that possessed by any other nation.

—giant aircraft factories, capable of designing and building the finest, fastest, and best all-around transport airplanes the world has ever known.

—an able and energetic nation of 130,000,000 people, world conscious as a result of the war, willing and capable of producing the products the world will need so badly—eager to exchange its wares in the marts of the world—and ready to travel.

These are the prime requisites necessary to establish American leadership in international air transportation.

Let us take a good look at these assets, with special reference to the "know how" of our American flag air transport companies, both domestic and foreign.

There are 19 United States airlines. Two of these operate in the foreign service and hold CAB certificates of convenience and necessity for overseas air transportation—American Export Airlines is one of these two companies. The seventeen other companies operate in

the domestic field and hold CAB certificates for such operation. There are also other business groups with new capital interested in entering this new and rapidly growing industry.

All nineteen airlines are now engaged in aiding the war effort by transporting passengers, cargo, and mail within the country or to all sections of the globe. All of these airlines have been loyally devoting their individual efforts and ambitions to military purposes and the all-important task of winning the war.

Many of the domestic airlines, when the war is over, will want to expand into the international field—as evidenced by the fact that a good many of them already have filed applications for overseas routes.

MONOPOLY OR COMPETITION?

While there may be a general desire on the part of the domestic airlines to enter the overseas field, there are two schools of thought as to how that problem may be met.

One school advocates formation of a single, government-sponsored, monopolistic, international airline, in which all American flag airlines could, if they wished, hold an interest, based on some, as yet unannounced, formula. American Export Airlines does not support this plan.

The other school of thought strongly opposes the placing of all of the development of our international air transportation in the hands of a single American company—a "chosen instrument"—or a monopoly. This school believes in regulated competition consistent with the policies and standards established by the Civil Aeronautics Act. American Export Airlines supports this plan. Furthermore, we do not believe that the alternative to monopoly would be unbridled competition. Far from it!

A definite government policy, firmly and impartially administered, can give the country the proper type of well-regulated competition—in the foreign as well as the domestic field.

AMERICAN EXPORT AIRLINES' POSITION

We are, and always have been, unalterably opposed to the thesis of monopoly. We believe that the fostering of

monopoly would almost certainly result in government ownership. We do not believe that the Old World practice of fostering a government airline would result in adequate advancement of American aviation. Our country is just too big for such a system.

Our Company and 16 domestic airlines on May 18th of this year signed a declaration of policy against monopoly, and presented it to the Civil Aeronautics Board.

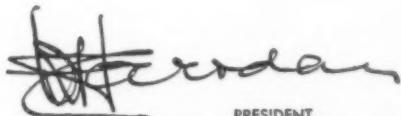
We strongly support the thesis of competition. By competition we mean that any American flag airline, interested in providing air service beyond our borders and into foreign countries, should have the right to make application to a properly constituted government body, such as the Civil Aeronautics Board. We believe that open hearings should be held by such a body, in accordance with the principles of free enterprise.

The number of companies that would emerge with certificates from such hearings would depend upon the ability of the applicants to qualify, and in addition, upon the judgment of the Civil Aeronautics Board and the President of the United States, as to the number of routes and services required in the public interest.

Such orderly procedure follows the "American way" of developing a new and vital industry. It encourages competition to an extent necessary to assure sound development—and yet regulates it to the degree that destructive "cut throat" competition is eliminated.



It is my earnest belief that the United States will get out of postwar aviation just what its government and the public are willing to put into it. Regulated competition, as opposed to monopoly—combined with private ownership—and with adequate government and public support, will enable United States aviation to secure for America its rightful share of the air commerce of the world in the postwar period.



J. Herodan

PRESIDENT,
AMERICAN EXPORT AIRLINES, INC.



AMERICAN EXPORT AIRLINES

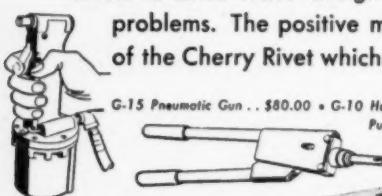


CHERRY RIVET PRICES ARE WAY DOWN X PRODUCTION WAY UP

The production
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Rivets in August was five times greater than
in August a year ago. In that time, the average
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This means that you can now use Cherry
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problems. The positive mechanical action
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G-15 Pneumatic Gun . . \$80.00 • G-10 Hand Operated Gun . . \$16.60
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Handbook A-43 tells how to use
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to the aircraft builders and the field crews
of our armed forces can now save time and
money in an even wider range of uses.

Orders have increased faster than produc-
tion, resulting in a large undelivered backlog.
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delivery on new high priority orders within
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CHERRY RIVETS, THEIR MANUFACTURE AND APPLICATION
ARE COVERED BY U. S. PATENTS ISSUED AND PENDING.

Cherry Rivet
Company
LOS ANGELES, CALIFORNIA

'Flying Freight Cars' Put In Coast-to-Coast Service by UAL

"FLYING FREIGHT CARS," said to be the only ones of their kind in commercial service, will be placed in coast-to-coast operation by United Air Lines between New York, Chicago and California, effective October 16, it was announced Oct. 12 by C. P. Graddick, director of United's air cargo department.

As contrasted with regular airliners, used in cargo service but which still have passenger seats, United's new "Cargoliners" will be completely stripped of passenger furnishings and will be equipped, instead, with such special cargo features as re-inforced plywood floors, plywood siding, steel screened windows and cargo bins. The planes, Graddick said, will carry approximately three tons of cargo as compared with the average of 1400 pounds carried on United's combination passenger-cargo Mainliners.

New York Board of Trade Creates Aviation Section

The New York Board of Trade has organized an aviation section to coordinate the postwar aviation industry in the metropolitan area as it pertains to domestic and international air commerce. The section will serve as a clearing house through which the industry and subsidiary interests will voice their future plans and consolidate their resources.

"In answer to a growing demand for a local aviation industry representation, the New York Board of Trade has organized an aviation section," said an announcement by Floyd N. Dull, president. "Its scope of activities will encompass the plans for the future of New York as a great airport center for domestic and international air commerce. Within the metropolitan area, there are many firms in the manufacturing and servicing of the aviation industry, as well as operators and allied interests, who desire to pool their resources and future planning. The aviation section thus will serve as the representative spokesman for the growing aviation industry in this area, and will offer a clearing place for ideas and platform for an aviation forum."

Traffic

NORTHWEST AIRLINES announces that a total of 479,957 pounds of mail was carried during August—an increase of 42,678 pounds over the previous month. The cargoes were carried 417,293,752 air mail miles exceeding the July total by more than 90,000,000 miles, the announcement said. For the third straight month, Northwest showed an increase in passenger service during August with 10,321 passengers. The total was nearly 2,000 higher than in July.

AMERICAN AIRLINES, Inc. announces that during August 2,043,958 pounds of express were carried, an increase of 67.3% over August, 1942. Air mail carried was up to 2,484,601 pounds during the month, an increase of 92.1% over the corresponding period in 1942. Average payload per airplane mile for August of this year was 4,688 pounds compared to an average load of 4,276 pounds in August 1942, representing an increase of 13.8%. Passenger load factor was reported at 92.6%.

"The new service not only will aid materially in providing additional space for the record volume of war-time mail and express which United is moving between the East, Midwest and Pacific Coast, but also will tend to open up additional space for essential passengers on other schedules," Graddick declared.

United's proposed schedules call for the Cargoliners to leave New York at 12:30 a.m. and Chicago at 5:10 a.m. with arrival in San Francisco at 5:46 p.m. the same day. Eastbound, the Cargoliners will leave San Francisco at 12:30 a.m. with arrival in Chicago at 3:44 p.m. and New York at 9:46 p.m. Midnight hour departures from seaboard terminals attract maximum cargo as well as air mail loads, officials pointed out. Both eastbound and westbound cargo flights will connect at Salt Lake City with the company's combination passenger-express-mail planes to Southern California and the Pacific Northwest, so that the new service will expedite shipments over the company's entire system.

Novel Application Filed

Among the novel applications now on file with the Civil Aeronautics Board for air transport routes is one filed recently by Shannons, 1413 Grand Avenue, Ft. Worth, Texas for a certificate to transport by plane sick, injured, and dead through use of air ambulances and air hearses. The company, composed of a partnership of J. O. Shannon, S. D. Shannon and M. B. Shannon, requests a certificate permitting it to operate from towns within a 600 mile radius of Ft. Worth to points throughout the continental United States and from all points in continental United States to towns within a 600 mile radius of Ft. Worth. The applicant stresses the need for such a service.

'Big Four' Has Captured 81 Per Cent of Nation's Air Business, Says Monroe

Eighty-one per cent of the nation's air business is in the hands of a "Big Four" while a "lean" 19 per cent is sparsely distributed among the 12 remaining carriers, C. Bedell Monroe, president of Pennsylvania-Central Airlines, charged in a recent address in Milwaukee.

He asserted that only by permitting the smaller carriers to compete in the more lucrative territories rather than restricting their operations to areas with traffic insufficiencies could "this unbalanced condition" be equitably corrected.

"By this monopoly of the most lucrative routes, there exists a situation with potentialities as explosive to the sound economic growth of aviation as a load of block-buster bombs, a situation which if left uncorrected, can reduce to a minimum our ability to offer gainful employment to our returning servicemen in an industry which should lead all others in expansion and resulting job opportunities," Monroe declared.

Compete or Coordinate: That is Question Before All Carriers—Stanton

The regulatory policies of both the Canadian and United States governments will be determined by whether the post-war services of the airlines and railroads are competitive or supplementary, Charles I. Stanton, CAA administrator, declared in an address before the recent convention of the American Society of Mechanical Engineers in Toronto, Ont.

"If the most fruitful relationship between the older and newer forms of transportation is to be one of coordinated joint activity, it will be sound policy for them to be under common ownership and direction," he declared. "On the other hand, if competition is to be fostered common ownership would not seem to be appropriate."

Stanton told the convention, attended mostly by Canadians, that in Canada's north country air service will be "both the fastest and the most economical."

14-Foot Long Ticket



American Airlines recently sold a ticket covering 6,000 miles of air travel to 40 American and Mexican cities. It measured 14 feet. Martha Nell Belshaw, reservations clerk, is shown handing the ticket to Jose Moreno, Mexico City importer, who purchased it.

TRANSPORT

Women in Air Transport

(This is the second of a series of articles on women who are doing an outstanding but little publicized job for the U. S. airlines.)



Camille L. Stein

NORTHWEST AIRLINES grew up with "Rosie" Stein.

Director of passenger service, and assistant company secretary, Miss Stein can look back on the days of the airline's beginning, when she herself hoisted a bucket of coal into the pot-bellied stove in the Minneapolis airport's first hangar office, chased cows off the field so that NWA's two planes could land or take off, and often made breakfast for passengers on delayed flights.

Miss Stein was working for the industrial division of the St. Paul Chamber of Commerce in 1926 when Charles "Pop" Dickinson decided to discontinue his air mail service between the Twin Cities and Chicago. A group of local men, anxious to see the air link maintained, formed Northwest Airlines on Oct. 1 of that year, took over Dickinson's business, and hired "Rosie" to handle it from her desk at the Chamber.

On payday, Miss Stein carried the money bag to the field and personally handed out the checks. She handled reservations and tickets, public relations, publicity, and advertising. When Northwest began to spread its wings, she left her work at the Chamber of Commerce and became an official member of the company. She was assistant traffic manager for many years, conceived and supervised a recreational and social program for company employees, planned picnics and parties.

Today, "Rosie" Stein has charge of Northwest's 45 stewardesses. She hires them, buys their uniforms, and studies their reports on how to increase the comfort of passengers. She has complete charge of the company's seven restaurants, including an immense cafeteria at its bomber modification project at St. Paul airport. She solves food rationing puzzles, prepares menus, purchases equipment (from toothpicks to refrigerators), supervises maintenance of restaurant buildings, and more than once has eased an emer-

Airline Commentary

This has been a fortnight of important hearings affecting the airlines . . . We took two flying trips to New York to sit in on the hearing on application filed by W. R. Grace for a U. S. terminal for Pan American-Grace . . . They are being opposed by Pan American Airways . . . If ever a battle was being fought for "keeps," this is it . . . Both sides have done a tremendous amount of work preparing their cases, as was evidenced by the direct and cross-examination . . . Examiner Francis Brown, who gets the laurels for keeping peace in the hearing room and for keeping the case rolling along, will have a tough time deciding this one . . .

And then, of course, there has been the celebrated feeder-pickup hearing . . . This confab brought strange faces to the Washington scene . . . Opening day attendance was terrific . . . Examiners Bill Madden and Alfred Beitel are going to have quite a record to read . . .

You can't keep a good man down, they say . . . CAB Vice Chairman Edward Warner had been in the hospital with pneumonia and was expected to remain there for quite a while . . . One day last fortnight, at least a couple of weeks before he was expected, he walked into his office, ready for work . . . We sometimes think Mr. Warner's mind works 24 hours a day . . . He's one government official who gives the taxpayers their money's worth . . .

We attended the very nice luncheon given by TWA in New York on Oct. 7 to present awards to the winners of the sixth annual TWA aviation writers competition . . . Present were not only many aviation writers, but numerous representatives of other airlines . . . And we think TWA should be congratulated for, in a sense, making this luncheon an industry affair . . . TWA foots the bill and rightfully receives the publicity, but the other airlines were there, their representatives were introduced, and a good all-around public relations job for the industry was done . . . It's an excellent example of industry co-operation . . .

Pan American Airways' *New Horizons* magazine recently carried the following amusing story: "Months ago, Alaskan Flight Steward Neal J. Boles lost his wallet, with it his treasured Short Snorter bill. Advertising in Seattle Lost and Found columns was fruitless, and Neal was soon set upon by fellow Snorters, forced to rejoin at a substantial markup. Overnights in Seattle six months later, Steward Boles stopped at Bartell's Drug Store for cigarettes, gave the cashier a \$5 bill. Among the \$1's counted back to him for change was his original Snorter certificate, slightly dimmed from unwanted circulation, otherwise in good condition."

When airline boys get together there's liable to be a little poker played . . . which brings to mind an amusing story . . . In an unusually rough poker game several weeks ago, one of the fraternity got "taken" for \$600 . . . The next day while getting a haircut he was bemoaning his loss to his barber . . . The barber, a horse racing fan, says, "Bet on Slide Rule" . . . Slide Rule, incidentally, is a Boeing horse, which still makes this an aviation story . . . So he bet \$100 on the horse, which won, and paid him \$590 . . . So the poker game cost 10 bucks . . . Wonderful people, these barbers . . .

Wise words seen on a card in Pan American Airways' Washington traffic office: "So long as you know you're green, you grow, but when you think you're ripe you begin to get rotten" . . . How true . . .

E. B.

gency by lending a helping hand with the dishwashing. All supplies for the convenience of passengers are purchased and installed under her supervision.

Miss Stein, who was the first woman chairman of the Air Transport Association's passenger service, averages 5,000 miles of air travel each month, personally visiting Northwest stations from Chicago to Seattle.

Phoenix on TWA Trunk Line

Phoenix, Ariz., was linked to the trunk-line system of Transcontinental & Western Air October 1 as a regular stop on two daily round trip coast-to-coast flights.

MID-CONTINENT AIRLINES grossed \$132,698.61 in August and has recorded net earnings this year, to date, of \$128,784.17, after taxes, the company announces. Revenue passenger miles in August were 1,289,892, compared with 803,173 in July, and mail pound miles totaled 29,201,135 in August compared with 20,030,322 in July. Express pound miles also increased to 5,548,632, in August, over 3,289,427 in July.

ALL AMERICAN AVIATION, Inc. earned a net profit of \$27,689.68 in the year ended June 30, compared to a net loss of \$22,407.40 in the previous year, the company's annual report reveals. As of June 30, the company had an earned surplus balance of \$11,409.97, and since that date \$655,450 has been obtained through the sale of 26,218 shares of preferred stock. All of the company's notes payable have been liquidated with the exception of \$150,000 outstanding under a V-loan agreement.



Dear Patricia—Received your best wishes. How can we
lose? Looking upon the scroll which was in
our ship—we found your autograph. We of the
Bombardment Squadron agreed that a girl
intelligent enough to realize that we can't
be beaten was worth writing to!
We found our ship in every way satisfac-
tory—complete in every detail except for
a lovely blonde to serve as hostess. However,
we realize there is a war on, so we can't complain.
Perhaps on your next ship—

and as for var-
ious sentiments expressed on the scroll to
the effect—give the fix is the worse—it's safe
to say that they are getting it in large doses—
Thank the whole gang for us—and
keep 'em rolling!

from the "Gang"
Bomber Squadron No. [redacted]
Somewhere in England

*An actual letter received at
United's Modification Center*

PATRICIA is one of many workers at United Air Lines' Modification Center located in Cheyenne, Wyoming. Day after day her skilled hands help in a task that might mean the difference between Victory and defeat for fighting men.

At Cheyenne, military planes for various combat areas are given last-minute installations, under the supervision of the Army Air Forces, to fit them for tough assignments of war. One plane needs increased range for Arctic operations . . . another re-

quires adjustments for desert warfare . . . still others need bigger bomb loads for special missions . . .

It is exacting work. And every ship rolling from United's Modification Center carries a scroll containing a message of inspiration from those who worked on the plane. These trained technicians—both men and women working at the Modification Center—feel a thrill of pride when a letter, such as this one to Patricia from a bomber crew "somewhere in England," comes

in answer to their own message.

It makes us all feel our responsibility in helping to maintain a continuous supply of war materials to our fighting men around the world. The Modification Center is but one of the wartime activities in which United is now engaged.

UNITED
AIR 
LINES

Back The Attack—With More War Bonds

PAA Opposes Panagra

(Continued from page 38)

statement to make that while the ownership interests have rendered valuable service to Panagra under various headings, that Panagra has carried on its own business and run its own airline?" Roig answered: "Oh yes, Panagra has had its own operating officials, it has had its own equipment, it has had its own personnel staff, its own maintenance, its own radio, everything that a self-poised independent operating airline has. It has had in addition the benefit of the services of its two parent companies and they have performed some of the functions which, if they had not performed them, Panagra would have had to do itself, but those functions have never interfered with Panagra's independence of operation."

"There have been differences in the board of directors, have there not, on the various steps in this program of development and progress that you mentioned?" Cahill asked. "There have on some of the steps, but it would be a great mistake if anyone got the impression that there has been a difference of opinion on everything that happened," Roig asserted. "As a matter of fact, Mr. Roig, on all of the questions up to the instant one, the extension to the U. S., the differences have been resolved, have they not?" Cahill continued. "With the exception of the terminal in the U. S. and the publicity question, we have reached a conclusion among ourselves, yes, on all these questions," Roig answered.

Roig Cross-Examined

Henry J. Friendly, attorney for Pan American, took about two days in a searching cross-examination of Roig. Dozens of letters from the Panagra files, back as far as 1930, were marked for identification (not yet accepted in evidence) by Friendly. Strong opposition to the letters was registered by Cahill, who objected to Roig being forced to testify on the contents of letters some of which he had never seen.

Friendly sought to show on cross-examination that even in the early 30's Pan American was urging Panagra to institute service with newer and larger equipment, but that suggestions were opposed by Panagra. Several of the letters offered by Friendly were correspondence between Panagra officials on the subject of equipment. PAA, he developed, offered to lease a Sikorsky to Panagra several years ago to improve traffic conditions. Roig, on the other hand, claimed that Trippe wanted to lease the plane, rather than have Panagra buy equipment, to put PAA in control of the northern division and keep Panagra out of Colombia.

Friendly also sought to prove that Panagra was formed solely for the purpose of operating between the Canal Zone and South America without a U. S. terminal. Roig denied this, stating that the purpose of the company was stated in the charter. Showed a letter from Roig to Col. Harold Harris, a Panagra vice president before joining the Air Transport Command, purporting to state that such was the company's purpose, Roig said that the phrase was merely a "colloquial preamble." To refute testimony that Pan American's connections from Miami south

are inadequate, cross-examination of Roig was designed to show that there were also many delays on northbound trips, resulting in disruption of PAA service. Roig said that more traffic could be handled if more equipment were available, revealing that Panagra has been asked by a government agency what equipment it could use if planes were available. He said the company replied by requesting DC-3As or DC-4s, in the alternative.

He indicated during cross-examination by Friendly that he favored "an independent name" for the company, adding that he considered the name "Panagra" (rather than Pan American-Grace) ideal.

The Panagra president was also questioned by E. Smythe Gambrell, attorney for Eastern Air Lines. Asked if a passenger obtained by Panagra was not a passenger lost to Grace, Roig emphatically said no, calling this a "meager and naive view on the future of aviation." Aviation, he said, has created most of its own traffic, adding that Panagra carries more passengers in a month than Grace carried in a year before the war. Roig denied that (1) Grace's other activities had ever embarrassed Panagra or that (2) Panagra executives had been slowed down by Grace affairs. Gambrell said he

intended to show that there was "divided allegiance" in the Grace-Panagra activities.

Trippe's Testimony

Trippe, whose direct testimony took two days, said emphatically that a U. S. terminal for Panagra "would be disastrous" to his company. Discussing interchange, Trippe said that the subject was brought up two years ago after the Civil Aeronautics Board had approved an agreement between United Air Lines and Western Air Express (now Western Air Lines). Asked at that time by Panagra President Harold J. Roig for his opinion, Trippe termed it a "very constructive proposal" and indicated a willingness to discuss it further. He added that the PAA executive committee was unanimous in its approval. An interchange over a New Orleans-Canal Zone route then being sought by PAA was discussed and Roig also wanted Miami-Canal Zone considered, he said.

Henry J. Friendly, PAA attorney, who was handling the proposal, became ill and nothing was done for several months, after which PAA didn't have time to follow it up because of pressing defense matters in connection with trans-African operations, Trippe explained. Asked if PAA was still interested he said: "We definitely were and have ever since and are today." Explaining why a U. S. terminal for Panagra would be "disastrous" to Pan American, Trippe pointed out that much traffic would be diverted to Panagra. PAA, he said, would be almost completely cut off from participation in business to the west coast of South America. Panagra, he added, would have a "conflict of interest" with both its owners. W. R. Grace & Co., steamship operators and 50% owners of Panagra, have an "adverse interest" in the development of through business by Panagra, he claimed.

There were instances during the national emergency, Trippe admitted, when PAA was unable to provide Miami-Canal Zone transportation for Panagra passengers, but he pointed out that there have been many occasions when the situation was reversed. Since the first of this year, he continued, Miami-Canal Zone has been much less congested than Panagra south. This, he said, was not a complaint against Panagra, adding that they are "doing the very best they can." Discussing equipment, Trippe said that PAA in 1940 had ordered 57 large 4-engined landplanes ('40 Constellations and 17 DC-4s) and 35 DC-3As which if delivered would have increased passenger traffic capacity by 450%. At least 18 Constellations would have been used on Latin American routes, he said. No deliveries were made because of the war.

Trippe was optimistic on the future of Latin American operations, expressing the opinion that PAA will be able to operate in that section without subsidy. Mail pay is now down to 13c a mile and revenue to the Post Office Department exceeds payment to the carrier, he claimed. With larger, more economical equipment, PAA will need "merely a compensatory payment" for mail and will be able to institute lower passenger and cargo rates, he added. Returning to the question of interchange, he asserted that "an interchange program could be put into effect as soon as the Panagra pilots could be checked out" (on Boeing 307 planes). Traffic congestion would be greatly reduced, Trippe said.

CAL 'Mainsprings'



O. R. Haueter (right), Continental Air Lines' vice president—operations, and J. F. Weiler, CAL's chief pilot, are the mainsprings for the airline's Air Transport Command operations in addition to their duties covering the company's commercial operations.



Photo by
Hugelmeyer
1st Air Force

Snub-nosed, lethal-appearing Republic Thunderbolts are proving the deadliest sky scappers in action today. With their pulverizing 6,400 rounds-per-minute firepower and their 1,000-mile range, the P-47 fighters are punching down all opposition to help the United Nations gain absolute air mastery over the European invasion front. The 13,500 pounds overall weight of the Thunderbolt includes eight machine guns mounted in the wings, a 2,000-horsepower radial engine, and a turbo-supercharger. With a level flight speed exceeding 400 miles per hour, the P-47 Thunderbolt has dived at 780 m.p.h. Its ceiling of 40,000 feet makes it an effective protector of bomber armadas.

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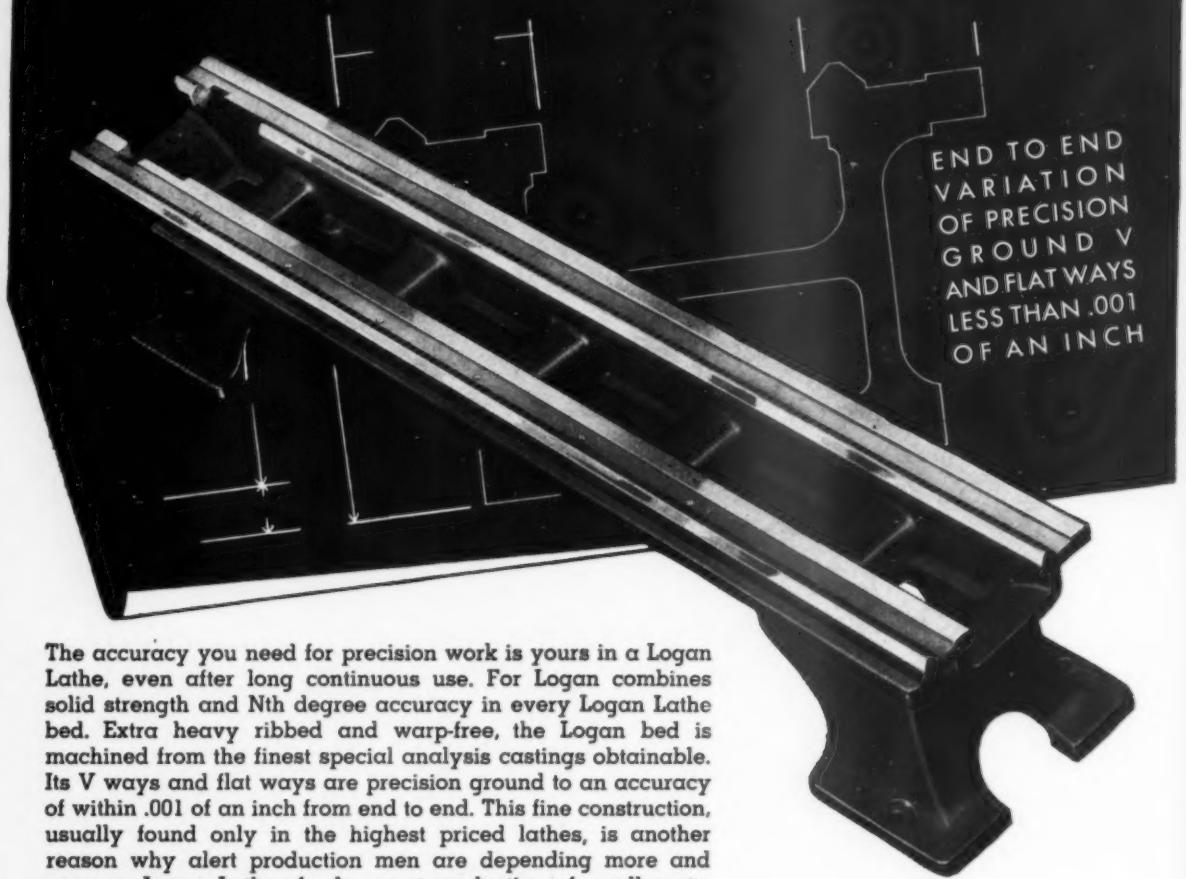


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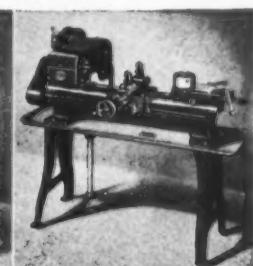
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CAB Gets 24 More Route Applications in 2 Weeks

NEW AND AMENDED route applications totaling 24 were filed with the Civil Aeronautics Board during the period from Sept. 24 to and including Oct. 8.

A check of the applications on file in the Board's docket section reveals that there are 246 applications for new routes. Of this number 84 are for conventional domestic routes, 38 are described as the conventional local-feeder applications, 48 would use helicopters or autogiros, 21 would provide a pick-up type of operation, 11 desire to operate non-schedule over new routes, 38 would provide American Flag carrier operations in the foreign field, eight ask certificates to carry cargo overseas, some of them in non-schedule operations and six provide for operations in Alaska.

Under the amended applications, 75 request additional stops and extensions, nine American Flag carriers ask added stops and extensions, five seek new stops in Alaskan service, three applications request new pick-up stops on present routes, four would add mail to present transport operations, six seek permission to add mail on Alaskan operations, six involve consolations or approval of purchases and four ask foreign permits.

A brief description of the new routes asked during the last two weeks' period follow:

Airdrome Transport

This company through Joe Ferrant, P. O. Box 508, Burbank, Cal. filed two applications. The one asks a route between Mills Field, Calif. and San Francisco, Oakland, and East Bay airports and authority to meet emergency landings within a 150 miles of these points. Applicant would use helicopters or autogiros to augment or replace a similar service which it now performs by automobile. (Docket 1086). In the second application, Airdrome asks a route to perform a similar service between Lockheed Air Terminal, Burbank Grand Central airport at Glendale, Los Angeles Municipal Airport and all other landing fields, airports and emergency landings within a radius of 150 miles of these points (Docket 1087).

Arkansas Valley Airlines

Applicant with office at P. O. 549, Van Buren, Ark.—a partnership consisting of Allen Whiteside and Capt. Thomas S. Crutten—filed for a certificate to transport persons, property and mail from 1—Wichita, Kan. to Memphis; 2—Springfield, Mo. to Jackson, Miss.; 3—Springfield to Shreveport, La.; 4—Little Rock, Ark. to Oklahoma City; 5—Fort Smith, Ark. to Dallas and feeder routes 1—Oklahoma City to Wichita; 2—Oklahoma City in a circuitous route to Chickasha, Okla.; 3—Tulsa in circuitous route to Claremore, Okla.; 4—Tulsa to Fort Smith, Ark.; 5—Memphis to Texarkana, Ark. There are 3,172 miles of route involved. All intermediate points are not listed herein. (Docket 1086).

Aviation Enterprises Ltd.

R. Earl McLaughlin, as president, with offices at 725 Bankers Mortgage Building, Houston, 2, Texas filed application for a certificate to transport mail, persons and property over 28 routes in the southwestern part of the U. S. (Docket 1078).

Blue Ridge Air Lines, Inc.

This company located at Hartman Airport, Harrisonburg, Va. has filed for a certificate to transport mail, persons and express on three routes between Alexandria, Va. and terminal points Norfolk, Danville and Bristol and two routes between Richmond and terminal points Bristol and Staunton. Overall distance on these five routes is 1139 miles. Applicant states it has adequate equipment for present demands of service with sufficient reserve equipment for emergencies. (Docket 1094).

Blue Ridge Lines, Inc.

Applicant with office at 55 E. Washington St., Hagerstown, Md. applied for nine routes as follows: 1—Washington to Pittsburgh, 2—Baltimore to Pittsburgh; 3—Harrisburg to Winchester, via Hagerstown; 4—Harrisburg to Winchester, via Gettysburg and Hagerstown; 5—Pittsburgh to Clarksburg, Va.; 6—Pittsburgh to Cleveland; 7—Pittsburgh to Wheeling; 8—Pittsburgh to Clarksburg; 9—Wheeling to Clarksburg. The company is now in the bus business and proposes to use helicopters if a certificate is granted. (Docket 1092).

Chicago & Southern

This carrier filed with CAB for two routes to Central and South America involving transport of persons, property and mail between terminal point, New Orleans and Rio de Janeiro, via Havana, Barranquilla, Colombia; San Cristobal, Venezuela Manaus and Goyania, Brazil and between New Orleans, Buenos Aires, Argentina, via Havana, Balboa, C. Z., Cali, Colombia, LaPaz, Bolivia and Salta, Argentina. The route to Brazil is 4,849 miles and to Argentina 5,109 miles. Through use of four-motored equipment, Chicago and Southern hopes to fly these routes in 24 and 25 hours respectively. (Docket 1085). The company also filed for four new domestic routes between co-terminals Minneapolis-St. Paul and the terminal point Chicago via Rochester, Minn., Madison, Wis., and Milwaukee (Docket 1073) between Kansas City and Jacksonville, Fla., via Springfield, Mo., Memphis and Atlanta (Docket 1074) between Chicago and Detroit, via (a) Ft. Wayne and Toledo and via Michigan City, Ind., and Elkhart and Adrian, Mich. (Docket 1075) and amendment to its certificate covering route 8 so as to authorize service between the intermediate point Memphis and the terminal point, Chicago via Evansville and Terre Haute, Ind. (Docket 1076).

Colonial Airlines, Inc.

This company asks a route between Washington, D. C. and Portland, Me. via Baltimore, Reading, Newark, Bridgeport, Hartford, Worcester and Concord for transport of mail, persons and property in scheduled operations. (Docket 1088). Colonial also asks permission to amend its application under Docket 609 to eliminate therefrom the foreign phase of the application requesting a route from Massena, N. Y., to Ottawa, Canada, in accordance with new regulations recently promulgated by CAB. (Docket 1070).

Colorado Airways

Organized as a co-partnership, of Durango, Col. this company asks a certificate to transport mail passengers and property in scheduled operations between Durango and Los Angeles, via Winslow and Phoenix, in Arizona and Blythe and Indio, Calif. Applicant proposes to use multi-engine planes capable of carrying a pay load "of at least 10 tons." The partners—S. N. Drum and R. F. Burress—both have licenses as private pilots. There are 2,330 miles of route involved. (Docket 1079).

Dixie Motor Coach Corp.

This bus company of 2805 Logan St., Dallas (1), Texas asks a certificate to transport persons, property and mail in scheduled operations over the following routes: 1—Dallas, Denton, Gainesville, Ardmore, in Texas and Oklahoma City; 2—Dallas, Sherman, Denison, Durant in Texas, Muskogee and Tulsa, Okla.; 3—Dallas, Greenville, Paris, Texarkana in Texas, Nashville, Hot Springs and Little Rock in Arkansas; 4—Fort Worth, Dallas, Tyler, in Texas and Shreveport, La.; 5—Dallas, Athens, Palestine and Jacksonville, all in Texas. Applicant proposes to use helicopters and is now engaged in operating a bus service. (1077).

Gillespie Airways

J. D. Gillespie, head of this company with offices at N. Ninth Avenue and Cumberland River, Nashville, Tenn. filed for a certificate to transport persons, mail and property over six routes, all emanating from Nashville, to the following points: Knoxville, 163 miles; Chattanooga 156 miles; Muscle Shoals 178 miles; Louisville 176 miles, Evansville, Ind. 151 miles and Memphis 233 miles. Applicant proposes to use helicopters. (1081).

Mid-Continent Airlines, Inc.

Applicant asks authority to engage in transportation of mail, persons and property between the terminal point Kansas City, Mo., the intermediate point Tri-Cities (Davenport, Moline and Rock Island) and terminal point Chicago. The overall mileage involved is 417 miles. (Docket 1069).

Midwest Airways

George W. Snyder, Jr. of this company with offices at 218 Felt Building, Salt Lake City, Utah, asks a certificate for the transportation of mail, passengers and express between Salt Lake City, Utah and the following points and intermediate points: Route 4—to Phoenix, via St. George, Utah; Route 5—to Albuquerque, via Price, Utah; Route 6—to Albuquerque, via St. George and Gallup, N. M.; Route 7—to Portland, Ore., via Elko, Nev. and Klamath Falls, Ore.; Route 8—to Butte, Mont. (Turn to next page)

—TRANSPORT—

via Burley, Twin Falls and Hailey, Idaho and Dillon, Mont.; Route 9—to Winnemucca, Nev., via Ely and Battle Mountain, Nev.; Route 10—to Winnemucca, Nev., via Wendover, Utah, Wells and Elko, Nev.; Route 11—to Rock Springs, Wyo., via Evanston and Kemmerer, Wyo.; Route 12—to Rock Springs, Wyo., via Duchesne, Roosevelt and Vernal, Utah; Route 13—between Phoenix, Ariz., and Albuquerque, N. M. Applicant, now a pilot in the U. S. Army, proposes to use Stinson type craft until larger and multi-engine aircraft becomes necessary. There is approximately 4,185 miles of route involved. (Docket 1071).

Northeast Air Lines

Applicant filed for permission to acquire control of the Mayflower Air Lines which has a certificate for a route between Boston and Nantucket. Northeast in another application asked permission, if the control feature is approved, for a certificate to carry mail on the Boston-Nantucket route. (Dockets 1083 and 1084).

Northwest Airlines, Inc.

This carrier filed amendment to its certificate for Route 3—Chicago to Portland, Ore., asking additional intermediate stops at Rockford, Ill., Beloit, Wisc., Dubuque, Ia., La Crosse, Wisc. Company previously made stops at Rockford and La Crosse, but discontinued service because of inadequate landing facilities. (Docket 1095).

UAL's Crary Addresses Los Angeles Club



Harold Crary, vice president-traffic of United Air Lines, recently addressed the Los Angeles Advertising Club and was introduced by another aviation official: Cliff Lewis, director of public relations, Vultee Division, Consolidated Vultee Aircraft Corp. Shown in the above picture, taken at the event, are, left to right—Lewis, Crary, Betty Stafford, chief stewardess for UAL in the Los Angeles area; and Capt. Hamilton "Ham" Lee, veteran UAL pilot.

Shannons

This company with offices at 1413 Grand Avenue, Ft. Worth, Texas asks a certificate to transport sick, injured or dead through use of air ambulances and air hearses. Full details of this company's application may be found on page 49 (Docket 1090).

Summit Airways, Inc.

Located at Laramie, Wyo. this company asks for two routes for transport of mail and property between Cheyenne and Billings, Mont. and intermediate points and between Rock Springs and Jackson, Wyo. and intermediate points, covering 909 miles. Company now has Air Agency, Repair and Air Rating certificates and is engaged in training Army and Navy students. After one year of operation, applicant asks to carry persons, property and mail. (Docket 1091).

The Ohio Airlines

Applicant with offices at 1121 Keith Building, Cincinnati (2), Ohio consisting of a partnership which includes an Army pilot and a former Army pilot asks a certificate to transport persons, mail and property over the following routes: Route 1—Covington, Ky., to Springfield, O., 78.8 miles; Route 2—Hamilton, O., to Muncie, Ind., 71 miles and Route 3—Cincinnati to New Richmond, O., 19 miles. The company proposes to use helicopters. The partners in the company are: Ralph P.

Minnesota Council of NAA Would Put States' Rights Into Lea - Bailey Proposal

The Minnesota Council of the National Aeronautic Association at its recent convention in Minneapolis endorsed the general provisions and purposes of the Lea-Bailey bill "except insofar as they involve a complete abrogation of states' rights." A resolution adopted by the council stated that the bill should be so amended as to preserve to the states and the political subdivisions of the state a certain voice in the operation of and use of the airports and airways in which private and public funds of the state and political subdivisions of the state have been invested.

Another resolution lauded the commercial airlines of the United States for their "important contribution to the successful prosecution of the war," and recommended that "substantial numbers" of transport aircraft and aircraft equipment be diverted to the airlines to alleviate the handicap under which they have been operating because of shortage of equipment.

Rich, and Lieut. Arthur D. Brown, former and present Army fliers respectively, Pascal Schwartz and David L. Ringo. (Docket 1072).

United Air Lines

United Air Lines filed for stops at St. Louis, Indianapolis, Detroit and four other important industrial cities of the mid-west on its coast to coast and Pacific coast airway network. The application asked a route from the co-terminals of Detroit and Cleveland to Toledo, Fort Wayne, Muncie, Anderson, Indianapolis, Terre Haute and St. Louis and from there to Omaha. Such flights would connect at Toledo and Cleveland with United's existing transcontinental services to Washington, Philadelphia, New York and other eastern cities and at Omaha with the company's present services to major cities of the intermountain region and the Pacific coast. United proposes two operations—one, a non-stop service from Toledo to St. Louis and thence to Omaha; the other, a service to St. Louis via Fort Wayne, Muncie, Anderson, Indianapolis and Terre Haute. In both cases, St. Louis-Omaha flights would be made non-stop. The new routes would add approximately 932 miles, bringing United's total route mileage to 7,258. (Docket 1080).

White Circle Line, Inc.

Applicant with offices at 8 Frew Terrace, Thompsonville, Conn. has filed an application for transport of persons, mail and express in scheduled operations between Northampton, Mass. and 12 intermediate points to terminal point Windsor Locks, Conn. and between Westfield and Palmer, Mass. via 5 intermediate points. There are 55 miles of route involved in the two applications. (Docket 1093).

RAILWAY EXPRESS AGENCY's Air Express Division reports that the weight of air express cargo handled by the nation's commercial airlines in May was up 44.1% over the same month last year. A total of 2,344,861 pounds, representing 118,699 shipments, was handled during the month, compared with 1,626,202 pounds in May, 1942, the report stated. Gross revenue of this air traffic, which moves for the most part on regularly-scheduled passenger flights, increased 32.1% over the comparable month last year.

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UAL, Export Reveal Positions

(Continued from page 24)

Cumulative Percentage Penetration of Air Travel into the 1930 North Atlantic Water-Borne Class "A" Passenger Traffic	
Market	Passenger Traffic
1944	28%
1945	41%
1946	54%
1947	67%
1948	80%

"It is our opinion that the proper airplane for optimum economy and maximum safety factor should be capable of flying non-stop 3500 miles and carrying 100 passengers plus approximately 5000-lbs. of mail and cargo. Our calculations indicate that 15 of such airplanes would be required to handle this market for 1944 and 43 for 1948, both figures being based on the requirements for the peak months of September. . . .

Demand Equals Schedules

"We may reasonably assume that foreign competition will demand some equal distribution of schedules. All British reports on this subject indicate such to be their view. Under the philosophy of the Atlantic Charter, an equal distribution could be expected. The 43 airplanes needed to serve a possible 1948 demand, distributed equally among 7 foreign countries and the U. S. A., would result in 6 airplanes for each country. If more than one United States company is to participate in the United States share of the North Atlantic competition, no one U. S. company could be an outstanding success in view of such a narrow market without completely ruining its U. S. competitors, unless such competitors received a very heavy public subsidy to insure survival. Do we want to promote an international subsidy war imposing added tax load upon citizens already burdened by an unprecedented war debt? Such a promotion should not be countenanced under the American system of free enterprise.

"A review of such figures leads us to the conclusion that neither individual airlines nor in the domestic field nor individual steamship companies can expect to extend their present operations into trans-ocean air service without destructive results. We should note at this point that British shipping interests, active in changing present British policy of government ownership, evidenced their recognition of a very limited market when they reported, as published in the Syren, March 10, 1943. Precision at this stage is clearly impossible, but certain basic features of such a project might here be stated. To secure an optimum size of air operating organization may well call for the pooling of resources by sea lines in partnership rather than operation by single lines."

Same Conclusion

"United Air Lines had reached the same conclusion prior to reading this report. We consider it quite significant that our independent approach to the study and that conducted by foreign interests arrived at the same answer with respect to resource pooling. We cannot agree, however, that steamship interests should ex-

	Number of North Atlantic Air Passengers			
	Annual Totals	Westbound	Eastbound	Average Per Day During Peak Month of September
1944	60,112	51,393	349	190
1945	88,021	75,254	510	278
1946	115,930	99,115	672	367
1947	143,839	122,976	834	455
1948	171,748	146,838	996	543

clusively make up such pooling. It may be that both steamship and airline interests should participate. Thus, as we view the various elements of the problem, it does not seem that individual domestic airlines or separate steamship companies serve to make the situation less complex by advancing their individual ambitions.

"In the domestic field nationwide air carriers have in most cases common points of origin and destination at coastal terminals. Their intermediate points, however, give them different geographical territories to serve between their terminals. In over ocean operation the situation is quite different because several operators would compete for long-haul traffic only, there being no intermediate cities to serve.

Would Hold Advantage

"We will assume that one domestic transcontinental airline applies and is granted the right to fly to London. Would the other transcontinental be satisfied to permit a domestic competitor to control the foreign sources of business and distribution within the United States? We do not believe they would. The same is true of Pan American or American Export. They would not be willing that the transcontinental carriers hold an advantage as competitors in the transocean field by having the right to route through business across the country. They would be perfectly justified in attempting to enter the domestic field to meet that competition.

"The Civil Aeronautics Board, in its regulation of balanced competition, could not in fairness give one domestic carrier such an advantage over the others. The same condition would exist if individual steamship companies made similar applications. The Civil Aeronautics Board, in our opinion, must expect strong public protest if any domestic air carrier is given an unfair advantage in the transocean field. If a chaotic condition should be permitted to exist whereby all those entitled to equal rights were granted them, we can visualize the creation of from eight to fifteen additional operators which, added to the foreign competition we may reasonably expect, would result in approximately 22 companies competing to do a job that would require only 43 airplanes even five years from now. Do we want competition between ourselves, as well as strong competition with foreign air carriers? All of this would doubtless lead to a situation where the survival of U. S. transocean carriers would depend upon subsidies out of proportion to the subsidy of the foreign companies collectively. Such a subsidy, in our opinion, would result in the spending of taxpayers' money to encourage waste and inefficiency

Air Busses Studied

Possibility of operating air busses after the war is being studied by a committee of Missouri Pacific Railways, bus subsidiary of the Missouri Pacific Railroad, according to R. J. McDermott, vice president. "If other carriers enter this field, it is probable our company will also," he said.

"The American people have reason to be proud of a sound and growing domestic air transport industry. The management of the companies composing that industry have an obligation to continue building and improving our domestic service under a wholesome system of regulated competition. There are also many places for legitimate and constructive business adventure by individual U. S. domestic air carriers, by invitation, in neighboring countries to the North and South of us in the Western Hemisphere, where destructive competitive conflict would not result. The position of U. S. Flag air transport operation in transocean service on every ocean must be second to none, strengthened through the experience of domestic companies. But we urge that the factor of foreign nation competition, a factor not present during the growth of our domestic airlines, be realistically considered and that the air carrier know-how and resources of the United States be used under a transocean policy that will do credit to the principle of well-managed free enterprise."

Solomon Answers

Solomon's statement answering Patterson said:

"Mr. Patterson's request that legislation be passed by Congress barring individual American domestic airlines from entering the international trans-ocean field is as amazing as it is inconsistent. Mr. Patterson seeks to place physical limitations upon the limitless ocean of the air and his words are in direct variance with the actions of his company. There can be no difference in air service outside the country, whether it is over land or over sea.

"Yet, United Air Lines operating one of the largest U. S. lines, also has recently acquired a Mexican line. Apparently it regards the ownership of a foreign subsidiary as all right for itself but would prohibit by law other American flag air carriers from flying the Atlantic and the Pacific unless its technique of acquiring a foreign subsidiary is observed. Walking the tightrope of self-interest, United declares that if the law it wishes is not passed, then United will also fly outside the U. S. This is evidently based on the theory that two wrongs make a right.

'Amazing Demand'

"Mr. Patterson proposes to exclude all other domestic airlines from flying outside the U. S. and then says in effect: 'But if you are permitted to do so then I want that privilege that should be denied to you.'

"This amazing demand is unprecedented in American industrial history. We have never heard of an individual or a corporation petitioning the U. S. Government to deny rights to competitors and in the same breath declare it is going to seek those rights itself."



"Another Martin First!"



AMERICA'S FIRST power-operated aerial gun turrets were built in 1937 by Martin for its PBM-1 Navy patrol bomber (shown at left). Martin pioneering paid big dividends to America's war effort.

U. S. Planes Pack a Potent Punch thanks to **MARTIN-MADE GUN TURRETS**

HOW does it happen that Martin, long famed for its fighting planes, is now also one of the world's largest manufacturers of power-operated aerial gun turrets? As far back as 1937 Martin engineers had foreseen the need for powered gun turrets and built America's first for their PBM-1 patrol bomber. When, in 1940, General Arnold proclaimed power gun turrets a "must," Martin was ready with actual experience and production know-how. Results: Martin is now mass-producing turrets not only for Martin aircraft, but for many other U. S. types as well. When you see pictures of high-speed bombers, the chances are 9 out of 10 that they are defended with Martin turrets.

Mass-Producing Gun Turrets

To give U. S. bombers a pulverizing punch and to lessen the need for fighter escort, Martin has turned its entire Sinclair division over to the manufacture of turrets. Martin engineers, seeking ways to turn



WICKED WALLOP is packed by these twin 50's in the Martin turret of a Martin B-26 Marauder. At high altitudes, where the slightest exertion is an effort, power turrets, easily operated by a twist of the wrist, are vital to Victory.

out turrets faster, achieved these results. The inner ring was cast as a single unit . . . moving assembly lines were perfected . . . and the "chassis" of the turret was cast in one piece, a feat which many experts had deemed impossible. Today, turrets . . . both electrically and hydraulically powered . . . are rolling from Martin assembly lines to make U. S. bombers feared by enemy airmen.

New Improvements

Hardly a week passes without changes or improvements being made in Martin turrets, to keep well ahead of the enemy. Plastics are being utilized to save metal . . . added comfort and protection are provided for gunners . . . and in numerous other ways Martin gun turrets are being improved to give U. S. planes a punch that spells "k.o." for the Axis—and Victory for US.

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TORRENT OF TURRETS pours from Martin factories, via moving assembly lines like this. Simplified design and advanced tooling boost Martin output. At end of line, guns are installed and turrets are ready to do business with Hitler.

Martin

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Airline Personnel



Bohanna



Crutchfield



Allen



Stuart

Chicago and Southern Air Lines announces that **Thomas D. Brooks** has been named superintendent of maintenance; **Robert R. Davalos** has been appointed coordinator of maintenance to assist Brooks; and **R. Todd Crutchfield** has been named assistant to J. A. Young, general manager of the C. & S. modification center.

United Air Lines announces the appointment of **Helen Throne** as "instructor of stewardesses." She succeeds **Laurabell Godlove**, who is returning to active flight duty on United's Pacific Coast route. United also reveals that **Ruth C. Uhl**, district traffic manager in Des Moines is celebrating her tenth anniversary in air transportation.

Pennsylvania-Central Airlines announces that **Dr. L. G. Lederer**, for the past several months acting chief of the airline's medical department, has been appointed director of the department. **Robert M. Baughman**, DTM in Grand Rapids, has been named DTM in Chicago. **James E. Rehkopf**, DTM in Baltimore,

has become assistant DTM in Washington. **D. C. John Van Loon**, who has been traffic representative in PCA's Detroit office, succeeds Baughman in Grand Rapids, and **Frank Murray**, until recently supervisor of the Chicago Airlines Ticket Office, has been appointed reservations manager of the new Chicago PCA office.

American Airlines announces the transfer of **Ernest C. Miehle** from its Los Angeles office to Washington, D. C., as air mail, air express, and freight representative.

R. A. Merkle, for the past eight years assistant district traffic manager of United Air Lines in New York City, has been appointed district traffic manager of Colonial Airlines in New York.

Col. Larry G. Fritz, former operations vice president of Transcontinental & Western Air, who flew the first load of mail in contract service, has been awarded the Air Medal. TWA announces the promotion of **James P. Stuart**, reservations supervisor in Kansas City, to district traffic manager at Phoenix, Ariz.

Dorothy Cecelia Bohanna, who was aboard the four-engined plane that made

ern region with headquarters in Seattle, succeeding **Jack Vermillion**. **George Pace**, of NWA's reservations department, Chicago, has been named assistant to Childs. **R. E. Remund** has been named assistant superintendent in charge of production at the bomber modification plant



Rehkopf



Baughman



Miehle



Tudhope

at St. Paul; **H. G. Haugland**, former modification office manager, has been appointed assistant superintendent in charge of administration; **W. W. Corder** has been named assistant superintendent in charge of production planning.

Delta Air Lines announces assignment of the following personnel to New Orleans in connection with inauguration of its new air route from New Orleans to Fort Worth, effective October 15: **L. H. Chamenois**, station manager; **Otis D. Hardy**, chief supervisor of reservations and tickets; **Vera Murray** and **Neva Beers**, city office staff; **Pauline Ponder** and **W. Mercer Dye**, reservations staff, **Dale Harper**, **Gulielma Kate Daves**, and **Lema Perkins**, field agents; **Dan D. Laxson** and **John E. Ball**, radio operators. Delta also announces that **Glen C. Evans** has been appointed station manager at Baton Rouge, with **Mrs. Laura McGeehee Buell** and **Evelyn V. Edmonston** as agents. **A. L. Hollis** has been named station manager at Alexandria, with **Martha Frances Chambers** and **Mrs. Gordon D. Riley** as agents.



Throne

Fritz

American Export Airline's first scheduled flight to Europe on June 20, 1942, has been named chief stewardess for the airline. She formerly was a stewardess for TWA.

George E. Michael, formerly manager of the Carlton Hotel, Washington, D. C., has assumed charge of the travel department of Eastern Air Lines.

Trans-Canada Air Lines announces appointment of **J. H. Tudhope** as executive assistant, with headquarters at Montreal.

W. F. McGrath has been shifted from Eastern regional traffic manager of Transcontinental and Western Air to superintendent of traffic at Kansas City. **Lee Swigert**, DTM at New York, gets McGrath's former post, and **Don Williams** becomes DTM in Swigert's place.

Northwest Airlines announces the following personnel changes: **S. D. "Dan" Childs**, formerly of the field traffic department at Minneapolis airport, has been named supervisor of field traffic and reservations for the company's west-



Davalos



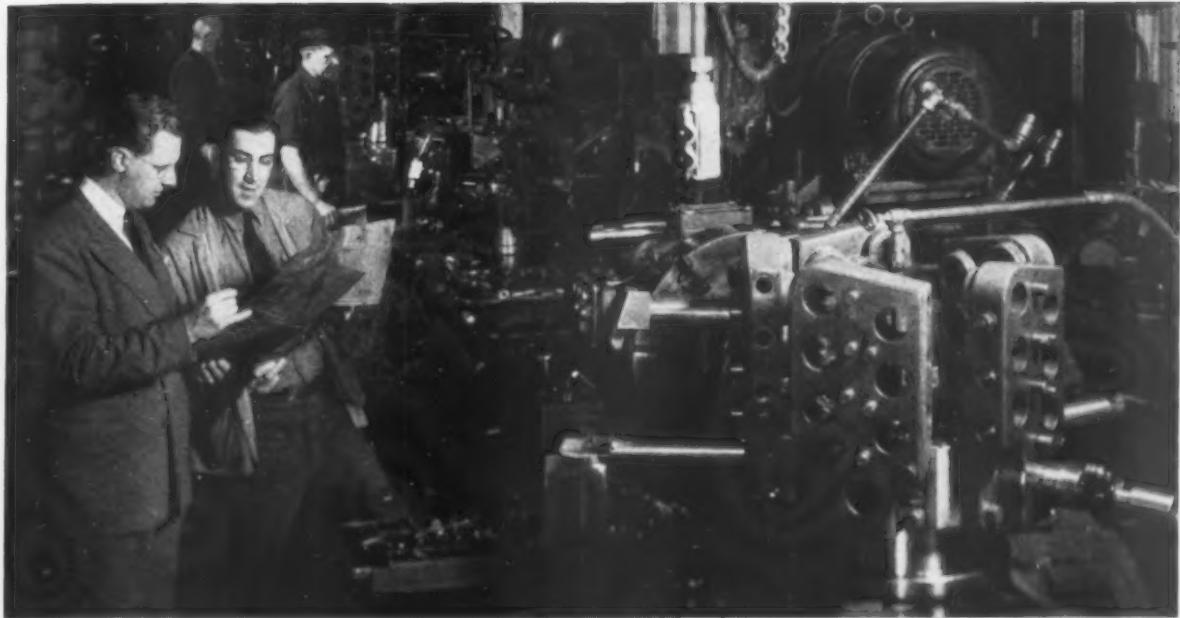
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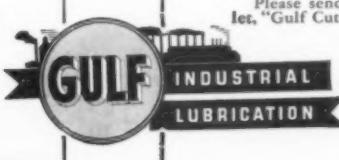
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CAB Gets Valuable Data in Feeder Hearing

(Continued from page 19)

lines, shooting out spurs in all directions. They also began to double track their main lines.

"We are, in my opinion, entering that phase of development in the commercial history of the airplane. We are on the threshold of great and intensive development requiring expansion along all lines.

"When I speak of expansion, I do not mean adding a few more schedules from point to point or a few hundred miles of new routes a year. I mean hundreds of new schedules and thousands of miles of new routes, millions of new passengers, great quantities of express and freight and most of all mail. We can meet the challenge presented by the possibilities inherent in air transport only if we are prepared to take advantage of our unparalleled opportunities," Stanton declared.

22 Not Served

Stanton pointed out there are in this country 140 metropolitan districts, each with 50,000 people or more. These, he said, are our major markets. Yet on June 30th of this year, 22 of these were not certificated stops on our air transport system. Their only air service was provided by airports serving other cities, and usually at some distance away.

"Certainly," he said "Every metropolitan district should have its own direct air service.

"Air transport has been used almost exclusively for longer distances," he continued. "It has been used little, if at all, for the shorter hauls. The explanation for this is obvious. Surface transport over short distances provides speed and comfort approximating that of air transport, and at lower cost—often at very much lower cost. If air transport is to be properly developed, it must strive to become superior to rival forms of transport over shorter as well as longer distances. It must do this not only where surface transport is impeded by difficult terrain but

also where the latter has no serious difficulties to overcome.

"We have made some studies to determine the optimum distance for air travel—in the northeastern section of the U. S.—that is, the region north of the Ohio river and east of the Mississippi—the optimum distance lies somewhere between 150 and 200 miles as measured by rail. Though we cannot be too sure, the optimum probably lies closer to 200 miles than 150, and that it is significant that our basis of measurement has to be the distance in terms of surface transport," Stanton declared.

In the program visualized by Stanton, 850 stops to serve 69 million of the 74,000,000 urban population of the country would be necessary. As 273 airports or stops are already in use or authorized, Stanton said that approximately 600 new stops would be adequate and this would place all cities of less than 10,000 population within 50 miles of an air stop.

Stanton expressed himself as favoring a classification of service as one of the steps in solving the feeder route problem. He suggested that the big trunk line carriers be given an A certificate, such as TWA, United, American and Chicago and Southern. He would place in a B group those carriers which operate services designed for smaller cities lying between larger cities. As an example, he used the Mississippi valley. He said a route from St. Louis to New Orleans might be designed to serve many of the smaller cities enroute. Such a B certificate could be held by one of the A carriers or it could be held by some carrier engaged in primarily a service between the smaller cities.

The third class or C certificate would include a service designed to serve one or more of a series of small cities spoke-wise from a large city, with no large terminal city at the far end of the several routes. Stanton said such service would be adaptable to small places west of

Denver to Grand Junction and similarly from Grand Junction to Pueblo.

Stanton emphasized that the Board should, in the granting of these types of certificates, specify the type of planes which should be used. He said this was necessary to insure a continuity of service. He called attention to the fact that some of the trunk-line carriers had suspended service to some towns when new and larger type planes found it a "tight-squeeze" to get into some of the airports. Hence Stanton felt that the type plane should be specified based on the character of the service to be performed and the airport facilities available.

The Administrator suggested that early consideration should be given to the possibility of carrying all first class mail by air. He pointed out that CAB, in recent decisions, had reduced air mail pay to 0.3 mills per pound mile. This was considered as indicative of the trend toward lower air mail costs and as having a bearing on the hopes of early accomplishment of this objective in the postwar period.

68-Page Report

Prefacing his remarks by stating the Board itself had not considered the merits or demerits of his study, Director Stough, CAB Economic Bureau, read a 68 page report touching on the two broad phases of the Board's request for information and advice on "the propriety of extending air transportation to communities and localities throughout continental United States to which such transportation may not appear warranted under unusual economic considerations or under existing standards of operations . . . and the coordination of any such transportation with air transportation presently authorized or which may be authorized under usual considerations and existing standards."

Stough told his audience he held firm convictions on four broad points relative to the air transport system. They contained a note of caution. He listed them as follows:

- (1) that the enthusiasm for a tremendous expansion of our domestic air transport system must be tempered with sound judgment if the policy of the Civil Aeronautics Act is eventually to be realized fully and properly;
- (2) while policies, principles and criteria could and perhaps of necessity must be developed through piece-meal action over a period of years, it probably would be in the national interest if at least the basic approaches could be determined in advance of disposition of individual applications;
- (3) there is no single point of departure for presentation or consideration of the feeder-service problem in a sequence of logical steps. It is a problem of a multiple nature. None of its phases is more important than another and there can logically be no separate and unrelated decision on its individual phases;
- (4) there must be constantly in mind the cost to the government of operating the service, as distinguished from the cost of establishing, maintaining and operating airports and air navigation facilities. The

Many Show Interest in Hearings



General view of conference room in Washington where testimony in the Civil Aeronautics Board's investigation of local-feeder-pickup air services was taken last fortnight. This photo was made at the opening session of the hearing September 28.

(Turn to page 64)



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Literature can be had by school or training executives for the asking. Address Main Office, Buffalo, N. Y.

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IRVIN
Air Chutes

SERVING THE UNITED NATIONS' AIR FORCES

Feeder Hearing

(Continued from page 62)

latter costs can not, of course be ignored, but the financial security and perhaps the very existence of some feeder operations might well be threatened by fluctuations from year to year in the amount the Government determines to expend as its portion of operating such services. Two public pressures at the end of the war may be easily anticipated. One will be the soaring enthusiasm for expansion of all things related to civil aviation; on the other hand will be the clamor of all of us for economy in Governmental expenditures and for reduction in taxes. The development and maintenance of our air transport facilities should not rest upon compromise between these two extremes. Instead services should be established under such general policies that (1) the cost to the government could not reasonably be regarded as excessive; (2) there is prospect of descending cost per unit of service, although of course the aggregate cost may become greater by reason of the greater volume of service being rendered for the Government and (3) provision of funds necessary for the purpose would be almost as unquestionable as provision of funds for interest and principal on our national debt.

Rep. Jennings Randolph, (D. W.Va.) appearing in his capacity as chairman of the West Virginia Planning Board, of his State's Aviation committee, recommended airmail pickup service for all of the smaller communities of the United States.

"Hearings now in progress can well be constituted as the most significant development in the aviation history of the United States," Rep. Randolph said. "We present the preface to an epoch which well may bring the development of air transportation to all parts of the country."

Citing the record of airmail pickup operations in West Virginia as an example, Rep. Randolph said he was convinced these operations were not only self-sustaining but were making a profit for the Post Office Department.

A full discussion of the airmail pickup problem was held on the fifth day of the hearing when four representatives of All American Aviation, Inc., pioneer in this field of operation, presented the Board with detailed reports and exhibits covering the 4½ years that this company has operated in six states out of the Pittsburgh area.

All American claimed steadfastly, with supporting figures, that its airmail pickup operations not only are on a self-sustaining basis but a real source of profit to the government. Harry G. Stringer, the company's vice president, testified that "the mail handled by All American in August produced \$118,846 in postal revenues for the Post Office Department as compared with mail compensation to the carrier in the amount of \$45,379." The witness further stated that if the amount of mail dispatched over AAA routes from the terminal cities of Pittsburgh, Philadelphia and Harrisburg were eliminated from the computation, the airmail actually originating in communities served by the air pickup routes produced a postal revenue of \$86,370, or roughly \$40,000 in excess of the mail compensation received by the carrier.

All American, through its president H. R. Bazley, urged the Board to adopt an aggressive development policy which would ultimately bring airmail service to most of the smaller communities of the United States. He argued against surface carriers being permitted to enter the air

transport field, furnished the Board with information as to the size and types of planes which would be needed in the company's proposed expansion program and expressed a hope, based on successful company experiments, that night airmail pickup might eventually be inaugurated to meet the needs of the country's mail posting habits.

Bazley also told the Board that his company felt the carrying of passengers on airmail pickup flights was feasible based on the company's experience in carrying approximately 100 persons to register their psychological reactions when the plane swooped low, at a high rate of speed, to pick up the mail pouch.

A twin-engined plane with all of the equipment necessary to meet requirements covering night and instrument flying was needed, Bazley said, in the company's contemplated expansion program. He suggested the need for a high wing monoplane, with cruising speed of 160 to 180 miles per hour, with maneuverability and complete control at 80 miles an hour. Capacity and payload should provide for 10 to 12 passengers, additional payload of more than 1000 pounds, 30 square feet of floor space for installation of pick-up unit, cargo space of at least 120 cubic feet and a cruising radius of 600 to 800 miles.

Dr. Ross Cunningham, assistant professor of Marketing of the Massachusetts Institute of Technology, who made an elaborate study of All American's airmail experience and operations and Austin M. Zimmerman, secretary of the company, also testified in behalf of All American's applications for new routes, which includes a request to carry passengers on certain flights.

"No trunk line operator should be permitted to engage in pickup operations similar to those described in All American's operations," Zimmerman contended.

The transcontinental air carriers represented at the hearing argued for the right to develop the local-feeder business in the areas served by their trunk lines.

A strong statement enunciating such a policy was submitted by E. Lee Talman, executive vice president of Transcontinental and Western Air, Inc., who said "It is the opinion of our company that local services along a trunk line are essentially and economically a part of that trunk line system; that to have the required frequency of service locally, it will be necessary to operate both of those types of service, in other words we do not believe that over a given area or route you can satisfactorily and economically have two carriers for separate classes of service."

Talman contended that the short-haul business of local character will, in itself, be quite frequently unprofitable but when added to the long-haul travel, the overall picture may well be profitable. He said further that if independent local operators were permitted to enter the field they would eventually have to become through carriers to make their operations profitable.

"Therefore we say to the Board if local service is granted along any of the present existing airline routes, there will be created a new airline operating over that route. We are not saying in any given situation whether that is a good or bad thing. We are only urging that recognition be given to the fact that a local operator will become a competitor out of economic necessity to the through operator," Talman declared.

(Turn to page 66)



Platt-LePage Helicopter: Described by W. L. LePage at the CAB's feeder-pickup hearing, this twin-rotored helicopter, powered by two 800-hp. engines, is expected to carry 12 to 14 passengers and two pilots. It is a project of the Platt-LePage Aircraft Co., Eddystone, Pa.

"Greatest Piece of Transportation in This War"



The Home Front*

By TOM TREANOR

... The greatest piece of transportation in this war is the Douglas DC-3 transport plane . . . (which) has won more battles than the jeep.

... without the DC-3 there would never have been the weblike system of military airlines all over the world . . . now known as the Air Transport Command. Without the DC-3 the Air Transport Command would have been set back a good year.

And without the Air Transport Command there's many a battle in this war would have gone slower or even completely sour.

To give one example, ever since the fall of the Burma Road the Chinese war has been supplied almost entirely by the DC-3.

Don Whitehead of the Asso-

ciated Press tells me that during the Tunisian campaign 15,000 casualties were evacuated in DC-3's without the loss of a plane or a life.

A surgeon told him that a principal reason for the extremely low American battle death rate was the rapidity with which the wounded could be brought to fully equipped hospitals by plane.

During the western desert campaign Whitehead says that without the supplies which were ferried to the front by DC-3's the 8th Army's advance would have been slower and the Africa Korps could

have dug itself in for determined stands instead of being nearly routed.

"We'd often see them coming over the desert in formation," he said, "flying so low they seemed no more than five feet above the ground, rising and falling with each ridge. Sometimes they'd come into advance airports while the dust of enemy bombings still hung in the air."

*"The Home Front" is a daily feature in the Los Angeles Times. The foregoing are excerpts from this column which appeared Sept. 6, 1943. Tom Treanor is literally a "self-made" war correspondent whose colorful exploits on many fronts have won him acclaim. Reference to the DC-3 also applies to the C-47 Skytrain and C-53 Skytrooper, basically identical models. This material is reprinted with the appreciation of the men and women of Douglas who build the planes Treanor praises.

DOUGLAS Aircraft Co., Inc.

Santa Monica, Calif.

LONG BEACH, EL SEGUNDO, AND DAGGETT, CALIF., TULSA, OKLAHOMA, OKLAHOMA CITY, CHICAGO

Member, Aircraft War Production Council, Inc.

Feeder Hearing

(Continued from page 64)

He said in practically all metropolitan areas there is or will be a need for a wheel and spoke type of feeder service and urged that out of competitive self-defense, such a route, when two existing carriers might be competing for such a route, be given to an independent operator.

Both Talman and representatives of American Airlines, Inc., who followed him to the witness stand argued against subsidies as a continuing policy. American was represented by its secretary, C. W. Jacob and A. D. Lewis, analyst. Jacob held that where public convenience and necessity required, subsidies might be granted for a year or so but certificates should be granted only when the Board felt that in reasonable time, the operations might become self-sustaining. Neither Talman nor Jacob felt the certificates should be classified.

A proposed system of community airports strategically located throughout the country to bring air transportation to every sizable community which could support it formed the basis of a study made by Lewis. On a large map, he exhibited 160 new airports, strategically located and said through development of this relatively small number of additional airports, a total of at least 1136 new cities would receive air service—492 of which are above 5,000 population. It was pointed out that American Airlines was already using this plan by serving two or three cities through one port.

The viewpoint of the so-called regional carrier in opposition to the position of the trunkline carriers was presented by several witnesses including Terrell C. Drinkwater, executive vice president of Continental Air Lines and Robert J. Wilson, vice president and secretary of Pennsylvania-Central Air Lines. Drinkwater contended that transcontinental carriers should stay in the transcontinental field. He gave information on his own line's operation indicating that the passenger traffic generated from seven cities of between 6000 and 17,500 had not been particularly profitable. He said Garden City, Kansas had produced for Continental 583 passengers in a 2½ year period. Of that total, 483 were destined for destinations on Continental's line. The complete study indicates, Drinkwater said, that as far as that particular community is concerned people do not travel between intermediate communities to fulfill social engagements or functions of that kind. He said that Continental's operations might well furnish the Board with a yardstick in connection with its responsibility for formulating future policies.

Drinkwater said he favored twin-engine, two-pilot airplanes. In regional or local operations, he said the co-pilot could perform many other purposes besides that of pilot. He can be the co-pilot, the hostess, baggage handler, ticket taker and mechanic and I think that will be inevitable in this feeder type of service.

"We feel that the present trunkline carrier should have a first right and preference to serve the local communities in a reasonable area on each side of their routes," Wilson testified.

Another who urged the Board to adopt

a policy permitting the regional carrier to develop the business along its trunkline routes was S. J. Solomon, president of Northeast Airlines, Inc. He said, however, that this should not be to the exclusion of uncertified companies if the Board found that there was sustaining business for both or if an operating company failed to serve properly the public need with reference to those communities in its territory which are now without air service. Solomon urged a sane subsidy program which would do for this new era of expansion just what governmental help had done when the entire transport industry was in its infancy.

A. E. Floan, secretary of Northwest Airlines, Inc., said his company was definitely interested in the so-called feeder type of traffic. He asked the Board to lay down a policy as soon as possible by action on pending applications so that Northwest's service pattern might be determined. Action on its domestic applications as well as on its applications for routes to Alaska and the Orient, will largely fix the destiny of his company, he said. Until that determination is made, Floan said his company could not formulate a program for service of a more local character.

R. Earl McKaughan, president of Aviation Enterprises, Ltd., Houston Tex., appealed to the Board for action of establishment of a policy now which would permit the establishment of secondary air-lines.

A Trade Area Airline service embodying two schedules daily between the main operating base at the major trade centers and a sufficient number of strategically located communities in the trade area so that 90% or more of the total population will directly receive the benefits of air transportation is envisioned by Braniff Airways, Inc., with reference to the future expansion of aviation.

Charles E. Beard, vice president of Braniff, gave the company's views. His company made an exhaustive report to the Board of its studies with reference to the Local-Feeder-Pickup problem. The company suggests that local schedules should be coordinated not only with trunk line air schedules but with similar schedules of railroad, bus and truck lines. Air routes would be confined within the trade areas and would not operate into the trade center of adjacent trade areas. Connections between trade areas would be established by junction with routes of adjacent trade area airline systems in marginal areas of each trade area where communities are found to be in the trade territory of two or more trade centers.

Braniff, in its recommendations to the Board, did not suggest complete monopoly for existing air carriers. "Ownership might, if practicable, be distributed in the area so as to assure maximum coordination of services with existing air carriers and maximum support throughout the area served," the statement declared. The Braniff exhibits included many maps and charts of a definite trade area. Complete information was included as to all types of transportation now available in the Kansas City area.

Braniff estimates it would take \$432,000

for equipment and \$168,000 in working capital, a total investment of \$600,000, to put its plan in operation in the Kansas City Trade area. The total operating expenses are listed at \$1,106,375 or a cost per mile not to exceed 35.05c. The company feels the government should allow a minimum return of 10% on the capital investment plus incentive pay to reward unusual efficiency, economy and development of the service.

Estimated mail pay required to earn a 10% return on a capital investment of \$600,000 with a fixed estimated cargo income from an average load of 200 lbs. at 0.175 mills per pound mile is as follows:

	Mail pay
3 passengers	21.45c per mile
4 passengers	17.45c per mile
5 passengers	13.45c per mile
6 passengers	9.45c per mile

L. E. Hampel, Economist for United Air Lines Transport Corp., and formerly a professor in the Economics Department of Northwestern University, testified that there is an urgent need and demand for air transport service to the smaller communities. That need, he said, may be met by the establishment of secondary airline routes. To properly serve the needs of these smaller communities, secondary route operations must be integrated with the existing air transport system of the nation, he emphasized. Requisites of such service should include a minimum of two schedules per day, with terminals on trunk lines no more than three hours distant, fares and comfort comparable with trunk line operations; schedules and routes which recognize the existing communities of interest and the traffic flow to and from these smaller communities, Hampel said.

The manufacturer's place in the program of Local-Feeder-Pickup development included the helicopter development. W. L. LePage, president of Platt LePage Aircraft Co., manufacturer of helicopters, appeared for his company.

He showed the group an artist's conception, based on what he termed were sound engineering consultations, of a 12 to 14 passenger twin engine, 2-rotor plane capable of making a 140-mile top speed and a 100 to 110-mile cruising speed. At the outset, he told the Board that it must be assumed generally that the helicopter is not yet out of the experimental stage. However, he did emphasize that its performance can now be predicted and its control and stability can be assured to the equivalence of other types of aircraft. LePage gave considerable technical information regarding the manufacture and operation of what he termed was "a wingless airplane flying with one or more propellers." He spoke of its inherent safety features which would permit relatively safe emergency landings and of a development which ultimately might make it possible for the plane to land vertically without necessity of a forward thrust propulsion which is now required. "The performance characteristics of the helicopter make it essentially a load-carrying machine. The character of the rotors are such that power can be applied through a selection of gear ratios, providing a thrusting force forward. Its forward speed will never be as great as that of the airplane. However, I beg the Board not to look upon the helicopter as a supplement, or an adjunct, but as a vehicle of transportation capable of assuming an entirely

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Where there's a fight there's a Mitchell

On every battlefield of this global war—in heat or cold, sunshine or fog—you'll find a B-25 Mitchell bomber. The belligerent Billy Mitchells care little whether they pick a fight with the enemy or step in to finish one.

Mitchells have won their spurs in the South Pacific... in the Aleutians... in North Africa... in the Mediterranean... over Europe.

They have left behind them chaos

and ruin for the enemy. With altitude bombing, low-level bombing, torpedo launching, strafing attacks, these tough, versatile wheel-horses of the Air Forces always have new tricks to throw at the enemy—because the men and women at North American are determined to keep the fighting Mitchells ready to strike ever harder blows each time.

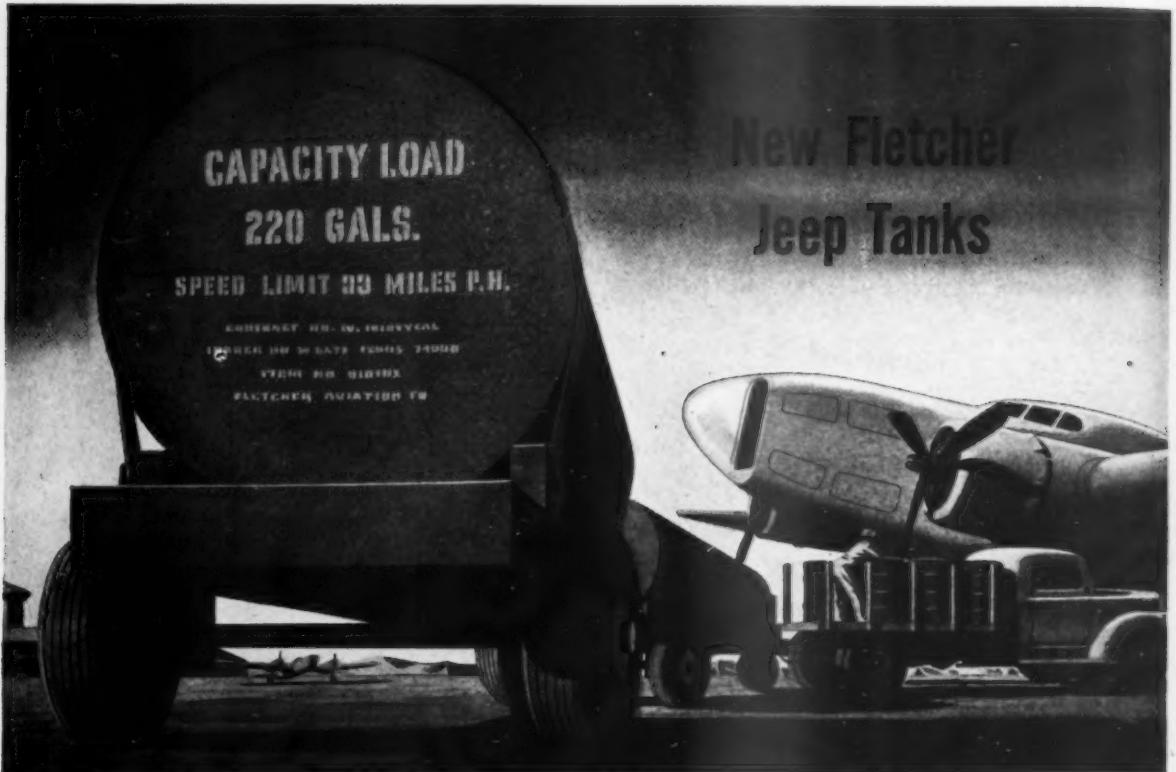
Good as was yesterday's Mitchell, today's is more deadly; fast as was

yesterday's production, today's is faster—as North American Aviation sets the pace.

The quicker the pace, say the men and women of North American, the sooner the victory.

*North American Aviation, Inc.,
designers and builders of the B-25
Mitchell bomber, AT-6 Texan
trainer and P-51 Mustang fighter
(A-36 fighter-bomber). Member Air-
craft War Production Council, Inc.*

North American Aviation *Sets the Pace!*



New Fletcher Jeep Tanks

...give gasoline service on the double!

Proven overseas where they have been serving with our armed forces, Fletcher Jeep Tanks are now available for domestic service . . . to lighten history's biggest load on airport fueling facilities.

These highly maneuverable, lightweight plywood tanks remove the burden from your regular trucks and storage tanks and get your gasoline to and from the plane on the double! Fletcher Jeep Tanks can be used to store gasoline or other liquids indefinitely . . . or, hooked behind anything from a jeep to a six-wheeler, singly or in trains, they can be towed to any location at top speed. And it takes only one man to handle the job.

Let your big trucks do the heavy highway hauling. Have Fletcher Jeep Tanks on the spot to do your airport service work quickly and at low cost.

Two sizes are available now . . . 220 gallon capacity and 600 gallon capacity. Deliveries can be made to essential industries immediately. Write for details.

FLETCHER AVIATION CORP.
PASADENA • CALIFORNIA

Hundreds of these tanks are used by the AAF for advanced base refueling. The all-plywood tank is instantly demounted from the chassis.



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Feeder Hearing

(Continued from page 66)

new sphere of importance in the transportation picture of the future," LePage declared. He said there were no technical reasons why this plane would not be built immediately but that it would represent a considerable cost—a portion of which might have to be borne by various outside interests. Ultimate cost would depend considerably on the number to be produced, LePage said.

Oswald Explains Study

Hourly operation costs of various types of planes which might be deemed suitable for local, feeder and pickup operations supplied the Board with some of the most helpful information submitted during the entire hearing, observers agreed. Furnished by Douglas Aircraft Co., Inc. in a report prepared by Carlos Wood, the study was explained, through use of lantern slides, by Dr. W. B. Oswald, the company's aerodynamicist. The report contained many exhibits and charts.

Operation cost of a 6 passenger, two pilot, twin engine plane was given as \$19.79 per hour, a 12 passenger plane at \$25.83 an hour and a 24 passenger plane at \$36.69 an hour. These same passenger categories for a one pilot twin-engine plane were: \$17.09; \$23.13 and \$33.99.

In the breakdown of the direct hourly operating costs between prewar DC-3's and postwar feeder type planes, Dr. Oswald emphasized that direct operation expenses only is considered and thus 100% payload and 0% overhead are assumed.

The report continued:

Lists Items

"Economical operation of airplanes suitable for feeder lines requires that close attention be paid to items such as the following: Pilots: weight of the pilot and co-pilot if one is used must come out of the payload. In small airplanes pilot's pay forms a large portion of the direct cost of the operation of the airplane. Small feeder line airplanes may be designed for operation by one pilot; Weights: Reduction of weight empty has an extremely important effect upon the economy of operation and reduction of minimum flying weight (including any necessary fuel reserve and safety devices) has an important effect on the economy of operation as does the weight empty; Operations: Operational technique and airplane design both must work to reduce the length of time lost at stops enroute not only on the ground but coming into and getting out of landing fields. Time lost enroute has a very important effect upon the economy of operation because the resulting reduction in over-all block to block speed and the resulting extra fuel required for maneuvering, idling and takeoff. Operations should probably be laid out to take full advantage of pick-up devices if mail or cargo is to be a part of the payload and to make use of flag stops to eliminate needless waste of time and expense enroute between fueling points."

"Miscellaneous: The feeder airplane should be designed so that engine changes,

repairs and maintenance may be accomplished simply, quickly and at low cost. Fueling should be accomplished simply and quickly. The airplane and equipment should be rugged, long lived and of low initial cost. It should also be remembered that small airplanes tend to run out of large enough space to adequately take care of baggage and such other items. Regulations:

Decisions must be reached concerning required performance of the feeder airplane under emergency conditions. As most operations will probably be contact flying, simplified radio, instruments and flight equipment should be allowed. The most economical operation would be with the use of a single pilot. If the evidence indicates that feeder operation will require the pickup of mail and cargo in flight the contemplated feeder airplanes may easily be designed to allow for the installation of necessary pickup equipment and to provide safe flight characteristics for operation at desired pickup speeds. If combined operations are found desirable, naturally suitable changes would be required in regulations. As a part of the attempt to reduce time lost enroute because of intermediate stops consideration should be given to allowing the use of strip runways by airplanes equipped with tri-cycle type landing gears. Such runways should be located near the direction of both feeder routes and of prevailing winds to allow landing, loading and take-off with a minimum of air and ground maneuvering."

Wootton Testifies

Carl Wootten, sales manager for Beech Aircraft Corp., appeared for his company with cost of operation data on certain types of planes which his company felt might be suitable for the feeder line operations. He called to the Board's at-

tention that his company, through war production, had gained valuable experience in the manufacture of various types of planes. Data regarding these war planes was submitted, he said, for the purpose of establishing a background and service record for the Beechcraft so that it will be viewed, not as an airplane on the drawing board, but an airplane that has been tested and has stood up under a type of service much more severe than it could possibly be subjected to in the course of normal feeder type of operations.

Single Pilot Operation

"The question of single pilot operation is one of the matters under consideration here," Wootten's report stated. "I should like to call attention to the fact that hundreds of thousands of flight hours are being amassed with single pilot operation in performing both day and night navigation and bombing training missions."

Figures on horsepower output, gas consumption and miles per hour at low levels (1500 feet) were given as follows:

Percent of hp. output	Gas Cons. per hr. (both engines)	True air speed
45	27 gals. per hr.	155mph
50	33 " " "	165 "
57½	38 " " "	177 "
65	40 " " "	181 "
75	46 " " "	189 "

Wootten gave the following additional information regarding this particular type of Beechcraft: Takeoff run of model 18-S at sea level under full load conditions is 525 feet; landing run under the same conditions 640 feet; plane will continue to take off if one engine cuts out at any speed above 50 miles per hour on the ground; will climb to 6000 feet with full load on the remaining motor; will cruise at 145 miles per hour on one motor using only 75% output from the live motor and can be flown safely on one or two motors at any indicated speed as low as 60 miles per hour.

Plane Costs \$46,850

The Beechcraft representative said it was impossible now to incorporate in its report to the Board the full text of the company's analysis on operation costs. The cost of the airplane was given as \$46,850 and it was credited with a utility factor of 1,000 hours per year. Average life of the plane was six years with resale value at the end of the period listed as 20% of original costs. Gross weight of the plane was given as 7,850 pounds, net weight of the plane was given as 5,300 pounds and useful load factor of 2,550 pounds. Cost of gasoline was 12.7 cents per gallon and cost of oil was given as 60 cents a gallon.

Wallace F. Ardussi, director of Research & Engineering of Foote Bros. Gear & Machine Corp. read a report on the Aero-Hydro Pickup Device used for picking up gliders on the ground by means of a tug-ship in flight. Total weight of the apparatus, occupying a space in the plane of 36 x 36 x 40 inches, was given as between 1,000 and 1,400 pounds. The device was designed for picking up gliders having a maximum weight of 18,000 pounds, Ardussi said. The operation of the device was covered fully in the engineer's report.



American Aviation Photo.
Dr. W. B. Oswald

Urges 'Maintenance Planning' by Airlines

By E. J. FOLEY

THE KEYSTONE IMPORTANCE of planned, efficiently productive maintenance to the successful airline of tomorrow is too readily overlooked. If we think of maintenance as a necessary, messy evil, the demands of which upon flying time are fixed by yesterday's catch-as-catch-can procedures, we can pass it by naively and with a clear conscience. There remains a crying need for sincere efforts toward the application of production technique and all it implies to our air transport maintenance.

Opponents of maintenance planning (and there are many—doubtless sincere) contend that the necessary fleet size and operating variables—weather, etc.—put airliner maintenance and production at opposite poles. Today, both of these objections may be valid; but with every tomorrow, they lose more of their importance. Contemplated postwar fleet sizes, even if we ignore many of the pending route applications, will bring the industry much closer to production quantities than in the past. Technological development is erasing the effect of operating variables which admittedly have impeded the continuous flow rate through the maintenance cycle.

Just how important is maintenance in your postwar operation? We cite a few examples in the hope of focusing deserved attention on the subject. It is entirely probable, Mr. Operator, that you will have to take the transition period in stride, operating commercial conversions of the military transports. Easily said; unless you propose that all fleet additions are to be cargo craft, you'll have to decide who is going to "convert" or "modify." Will it be your maintenance department? If so, you'll need a plan.

Speed: the Essence

You plan new operations. Speed will be the essence of your commodity. But remember that weather and reservations and communications are more of a bottleneck than maintenance. Your maintenance plan must provide for the handling of every potential problem in the absolute minimum number of man minutes. Over and above indicating the need for clean secondary aircraft design detail, this point shows us the probable need for some overstaffing and overequipping at line stations in anticipation of emergency peaks in output. The utilization of this manpower and equipment between airplanes calls for a plan again.

Safety has always been the keynote of every airline move. Maintenance safety is an obvious prerequisite to operating safety and morale is a vital part of both. Random maintenance, as the minute demands, cannot help but have a negative effect on esprit de corps. Correctly or not, it leads the mechanic to the thought that the entire operation follows the same



Foley

pattern. Therefore, you must plan and, as the volume of business grows and you begin to diversify services, the need for precision planning balloons.

Enough of the importance of maintenance planning. What is needed to do it successfully? To attempt to give all the answers on this page is absurd; as a matter of fact, we have suggested some of the answers in earlier papers. We shall supplement these remarks.

Standardization is a single factor that appears to offer most in the matter of production techniques being applied to airline maintenance. Of course, standardization of aircraft type alone is not enough; we imply also engines, propellers, accessories, etc., right down the line. Unless we clarify this point at once, we are liable to be accused of sponsoring cartels. We don't see that standardization need retard development, so long as it is an open-eyed standardization. Competition will see to it, if allowed, that the operator takes advantage of every improvement. Our point is that exclusive of these special "improvement tests" we attempt standardization; and that, if the "improvement" is adopted we standardize on it.

Foresees Functional Types

We are not so naive as to believe that there will be industry-wide standardization of flying equipment. The air transport industry has passed the stage where such was desirable and necessary for obvious reasons. We will carry the reasoning further and say that indications are toward the operation of several functional aircraft types by each operator. Assuming a "fleet" of each as the only economical operating basis, this in no way defeats our purpose of standardization.

With standardization behind us, we can

AA's New Tire Changer



A small crank at the top and a hydraulic pump at the side are recently added features of American Airlines wheel skate unit, which is used to move 580-pound tires from planes. The device was invented by AA's Luther Mead.

move into the field of main base maintenance decentralization. It appears entirely practical to have specialist-manned, production equipped shops for engine, propeller, accessory, instrument, etc. and as many "lines" as would be required to handle the several standard types of these units employed on our functional aircraft types. We hasten to inject the obvious; the foregoing naturally assumes an all-airline maintenance program as contrasted with manufacturer-maintenance or maintenance subcontracting to an independent agency. Since we hold no brief for any one of these as an airline maintenance panacea, we feel free to discuss any one any time.

To us, these production line specialist shops are fully practicable and, by intelligent and discreet personnel and equipment selection, could be maintained at a production level consistent with current fleet size, yet permitting ready expansion.

Two manpower utilization gaps, both obviously dependent in extent upon fleet size would seem to remain even upon establishment of these specialist shops. The first, more readily regulated, is the staff assigned to the maintenance of the aircraft proper—i. e., what is left on the hangar floor after removal of all practical units or assemblies to production service shops; and second, the line maintenance staff. Of this latter group, we have not previously spoken. It makes sense to us to consider that regardless of the basic maintenance program embarked upon—airline, manufacturer or agency-line maintenance will continue as an airline function.

The line maintenance staff at the main base may be fully utilized by reason of the number of aircraft moving through the station. Few service points other than the main base can hope to achieve a high mechanic utilization factor. Yet the need for maintenance personnel to serve peak periods or for emergency standby function at every line station would be granted by the thirstiest operator. Without risking being labeled an "efficiency expert," we believe we can say that the spasmodic efforts of line station personnel are unsatisfactory to the maintenance staff as well as the airline.

Talent Unrecognized

The talent of many of these mechanics may be unrecognized because of their remoteness from headquarters and part of the time of all may be wasted standing by. Either or both of these elements is unhealthy and demoralizing. When we consider the impossibility of a double standard for airline maintenance—main base and station—we are more impressed with the need for top-notch morale and constant peak precision at Carlsbad and Chicago alike.

One possible contribution toward solving this problem is the further decentralization of certain manufacturing and maintenance functions—decentralization to the extent of moving these functions out of the main base to a line station; maintaining the production line principle but simply changing the scenery.

As an example, let us say our airline fleet requires periodic replacement of some

dozen complicated rigid fluid lines. To economize on man hours and material, we decide to jig and tool up a little to mass-produce all these tubes and supply replacements to all bases as required. Looking about our system, we see Joe Wilson, alone at Knoxport, whose progress record (being a particularly effective helpful document, unlike so many personnel forms) shows a remarkable aptitude for tube bending and aircraft plumbing. But Joe has only one ship a day in each direction through Knoxport, and he probably hasn't "plumbed" for months.

To give Joe a chance to make the most of his aptitude, we name Knoxport as our plumbing subcontract depot, jig and tool it to do the job, and Joe's time before, between and after his two trips, is occupied forming tube segments. Maybe he'll simply manufacture these pieces and supply all stations from his stock; or again, Knoxport may be named as the plumbing service depot and our production line of aircraft may be scheduled through this station for all plumbing work. This latter point becomes almost insurpassably complex when we think of trying to time our schedules for aircraft to reach a different specific station on time for each of several items of service work.

Considering the Newcomer

Our illustration is worded to suit an airline just setting up business. Obviously, the same move, if made by an established carrier, would just mean the transfer of certain portions of facilities from the main base to Knoxport. Carried to the extreme, this technique would result in the distribution of equipment, material and probably personnel throughout the airline's routes.

If such a program were to be initiated we can visualize consideration being given to the adequacy and skill of a certain labor market adjacent to one of our stations; to the proximity of the manufacturer or a source of required parts and materials supply; to the atmospheric conditions at a certain station which might permit work being carried out without need for elaborate hangars; to the cost of electric power or other utilities needed for the specific station's assignment, etc. We repeat that this thesis is not advanced to support full retention of maintenance by the airline as opposed to manufacturer maintenance or servicing by an independent agency. We offer it merely as a possibility if the operators decide to do all their own maintenance and overhaul work.

Neither of the points treated, standardization and decentralization, are without problems and disadvantages. But we doubt that any panacea for these ills will turn up in the near future. If it is found, the discovery can only come from the study of all angles of this phase of airline operation. We have elected to make our role that of the "stone turner-over"—to try and expose a few of the many possibilities in the field without taking up the cause of any one. There are doubtless some who have ammunition to shoot the above premises full of holes. Lest there be others who agree to our propositions without benefit of full experience, we want the gun toters to fire away. Thus we may all learn what to avoid.



Reason for War Bonds

Each three dollars saved in War Bonds today means four dollars you'll have toward that familyplane tomorrow. Meanwhile your dollars will not only help to win the war, but hold down prices at home.

{ On your postwar plane specify a constant speed, light-weight Wickwire Automatic Propeller, with its fully automatic pitch change }

WICKWIRE SPENCER AVIATION CORPORATION

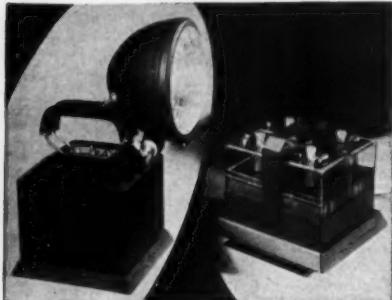
BLUE ISLAND, ILLINOIS

(Subsidiary of Wickwire Spencer Steel Company)

Equipment News

Celluloid Battery Cells

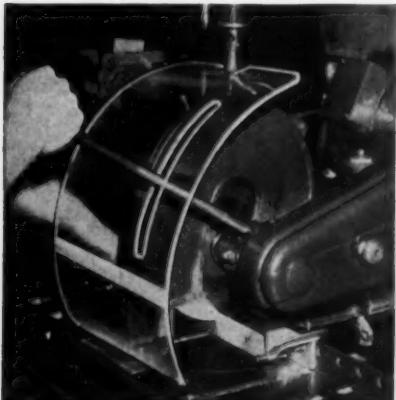
Weighing but one-third of the hard rubber they replace and at the same time facilitating electrolyte level check, four transparent Celluloid battery cells contribute to the efficiency of the power-



ful portable searchlight, 110,000 beam candlepower, manufactured by the Dewar Mfg. Co., 28-34 35th St., Brooklyn. Twelve and one-half pounds is the total weight of the light, batteries and all. Tests reveal that under certain atmospheric conditions, the light can be seen eight miles at sea—a limitation set by the horizon. Acid resistant and a non-conductor, the cell housings are said to be so tough as to resist a 12-foot drop on concrete. Celluloid is the product of Celanese Celluloid Corp., 180 Madison Ave., New York.

Republic Designs Shields

Republic Aviation's Methods Engineering Department has designed new shields to reduce head and eye hazards. The material used is transparent Plexiglas, a



product of Rohm and Haas Co., Philadelphia, Pa. These plastic shields may make the much-neglected safety goggles unnecessary for certain operations.

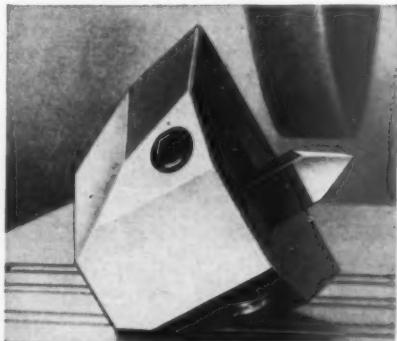
Pulsation Dampener

The Ashcroft Gauge Division of Manning, Maxwell & Moore, Inc., Bridgeport, Conn., announces the new Type 1106 Ashcroft Pulsation Dampener. It is said to be a small, efficient throttling device ideal for use with pressure gauges subject to severe pressure pulsations and rapid fluctuations such as on reciprocating pumps. The principle is simple:

a small monel plunger oscillates freely in a cylindrical hole in the bushing; the clearance between the plunger and hole is just sufficient to give the proper throttling action for certain conditions. The free movement of the plunger makes the unit self-cleaning. It is said to be good up to 5000 psi pressure and for all media: oil, air, water, steam, eliminating gauge pointer vibration, gauge wear, helping to keep the gauge in calibration and prolonging gauge life. Five different size holes are provided in the bushing to assure all necessary degrees of damping. The plunger may be transferred from one to another and a sealing disc closes all but the one in use.

Clark Grinding Fixture

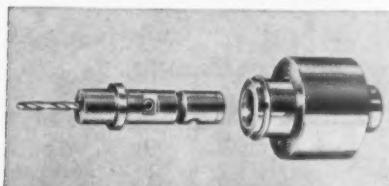
Robert H. Clark Co., 3424 Sunset Blvd., Los Angeles, 26, Cal., introduces this new and unique thread-tool grinding fixture for grinding both 60 and 29 degrees. It is available in two standard sizes;



each of which takes all bits within a $\frac{1}{8}$ " to $\frac{5}{8}$ " range. One model is designed for the mechanic's tool kit; the other is identical in function but a heavy duty shop model. The manufacturer states that the new fixture has no graduated scales or moving parts. The machinist merely slides the tool into the holder, tightens a set-screw and places the fixture on the grinder work table, properly positioned for the thread angle desired. The fixture's design makes it adaptable for either a magnetic chuck or clamp. It is made of high permeability steel.

High Speed Drill Chuck

Said to permit tool changes with the motor running in less than five seconds, a new high speed drill chuck is known as the Centrif-O-Matic and is the product of R. M. Wright Co., Washington Sq. Bldg., Royal Oak, Mich. The tool change is accomplished by sliding back the outer sleeve which releases a centrifugal lock,



removing the tool and adapter, sliding in the new tool and snapping back the sleeve. Centering is claimed to be automatic and positive.

York Engine Heater

York Heat, division of Thos. Shipley, Inc., York, Pa., has developed a small portable engine heater. It weighs 38 pounds and can be carried by one man; it produces 90,000 b.t.u. of heat per hour



and is said to use 92% of all the heat units of the aviation gasoline used as fuel. The unit has been applied to a 2000 h.p. aircraft engine at a cold room temperature of -20 degrees F. The engine can be started in 15 minutes.

High Frequency Motors

A new line of high frequency electric motors for use with aircraft A-C systems has been developed by U. S. Electrical Motors, Inc., of Los Angeles and Milford, Conn. The units operate on 3-phase, A-C, 400 cycles and range in size from $\frac{1}{8}$ to 15 h.p.; synchronous speeds of 5,000, 8,000 and 12,000 rpm can be provided and integral speed reducers, gear type, make lower speeds available. Various types of flanges for mounting are supplied. Motors can be furnished for continuous or intermittent duty ratings. Bearings with self-contained seals are prepacked with low-temperature grease. Windings are stationary and can be well insulated. Standard AN type connectors can be supplied. Magnesium housings combined with the inherent weight economy of the 3-phase, a-c, high frequency power are said to produce a weight saving of considerable proportion over present equipment.

Boice-Crane Jointer

Accurate jointing of 25% to 50% longer stock is permitted by the extra long tables provided with a new 6" Jointer man-



factured by Boice-Crane Co., 906 Central Ave., Toledo, O. The $2\frac{3}{4}$ " diameter cutterhead has a 3" diameter cutting edge or swings entirely below the table to permit rabbeting. The unit is said to be the only one of its size with two-end fence locks. The patented rear fence lock makes the fence so rigid that six times ordinary feed pressure cannot spring it. The fence is 35" long, 10" longer than most jointers. Bench and floor types are offered in belted and motor drives.

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Safety first . . . last . . . and
always . . . that's the bail bond
which protects our lads who fly.

* * * Manning the best planes
ever built . . . with guns and
equipment to match . . . crack
airmen emphasize that no small
part of their ability to concen-
trate on destroying the enemy, is
their feeling of confidence in
their safety chute . . . if need to
leave the ship overtakes them.
* * * Switlik leadership in
design and Switlik efficiency of
production, are turning out the
finest parachute that money can
buy . . . and are setting new records
for deliveries! * * * * *



Air Power is winning the war
... The more Bonds you buy
... the more hours they fly!

SWITLIK PARACHUTE COMPANY

Trenton, New Jersey

Industry's Fiscal Problems Unique, Says Harvard Report

CONTENDING THAT the financial problems of the aircraft industry have been created by war and are of such magnitude that the policies and precautions of individual companies cannot greatly change the situation, Assistant Professors Lynn L. Bollinger and Tom Lilley of the Harvard Business School in a report entitled "Financial Position of the Aircraft Industry" assert that any major corrective action will have to be initiated by the government.

Financial statements at the end of 1942 of 11 major airframe manufacturers, representing the bulk of the completed aircraft produced in the United States form the basis for the study.

The report states that the present position of the aircraft industry is unique in industrial history. The industry, with a phenomenal growth in output from \$200,000,000 in 1939 to \$20,000,000,000 in 1943, is the largest in the world. As a comparison, the peak automobile production was \$4,000,000 in one year.

"Stockholders' capital at the end of 1939 was equivalent to 53% of the annual sales value in comparison with 113% for a representative industrial average. By 1942 this aircraft equity was 8% of sales and the industrial average was 70%. Around 80% of the industry's plant capacity was government-owned at the end of 1942. The working capital with which operations were conducted was in effect 73% government money. Over half of the industry's inventories were owned by the government and a large proportion of the remainder was purchased with funds supplied by the government in the form of advances on contracts," the report stated.

"A most conspicuous aspect of the financial statements of the airframe manufacturers is the extremely low net working capital shown; that is, the small margin by which current assets exceed current liabilities. The common barometer of working capital, the current ratio, was 1.09 for the airframe group as a whole. Before the war it was 1.7. The strongest position found among any of the aircraft companies surveyed was 1.17 at the end of 1942. By all usual standards these figures indicate an unusually weak position. Prior to the war, industrial companies on the average had a current ratio of over 4, and by the end of 1942 the sample group of industrial companies investigated still had a current ratio of 2.2," the report disclosed.

Three major risks are seen in the present working capital position of the aircraft companies. They are: (1) Existing corporate resources may prove inadequate to absorb losses resulting from contract termination and inventory liquidation. (2) Subsequent costs of contraction and conversion may consume a substantial part, if not all, of available funds. (3) Remaining capital, together with that which the companies appear capable of raising, may prove inadequate for maintenance of peacetime employment and production.

The joint effect of federal taxation and

renegotiation largely determines the amount of new funds currently retained from operations, the report commented. For the average aircraft company in 1942 these items took 84% of operating profit on sales. This percentage was considerably higher for aircraft companies than for other industrial concerns examined. Taxes took about 75% of operating profits and the net effect of renegotiation accounted for 9%.

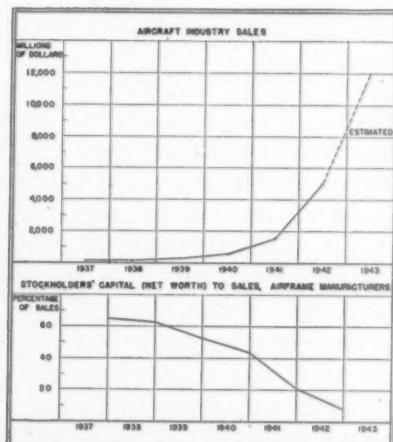
"It is difficult to measure the effect of renegotiation and taxes on a 'normal' rate of profit," the report pointed out. "The 1942 net profit after taxes of 2.7% on aircraft sales appears low; on the other hand, the return of 33% on net worth appears high."

Conventional measurement of "profitability" is inapplicable because of the government's tremendous demand for the industry's product and because of large amount of government owned plant and inventory not reflected in corporate net worth, the report stated.

"The companies may experience serious difficulty in curtailing payrolls and outside commitments as rapidly as orders are cancelled. The average company's total liquid funds at the end of 1942 could meet five weeks' expenses for payrolls and materials at the current rate. Net working capital was sufficient to meet these expenses for just two weeks. Should many months of accounting and negotiation both with the government and with subcontractors be required in settlements, the mere clerical and legal costs would result in a further drain on working capital," the study contended.

The report further pointed out that the companies will face the expense of months of re-tooling, experimental fabrication, testing of trial models, the necessity of maintaining key factory and office personnel in partial idleness for a period

(Turn to page 82)



Aircraft industry sales and airframe manufacturers' ratio of net worth to sales: 1937-1943.

Bendix Output '50 Times' Greater in Past 9 Months Than in Entire Year 1938

"Fifty times" as many aviation products have been manufactured by the Bendix Aviation Corp. in the first nine months of the current fiscal year as were produced during the entire year of 1938, Ernest R. Breech, president, reveals in a letter to stockholders.

The letter gives a detailed unaudited interim consolidated balance sheet on previously reported sales of \$643,148,412.77, compared with \$297,690,090.58 for the first nine months of the previous fiscal year. Earnings, after provision for Federal taxes and price adjustments after the renegotiation law, were \$11,995,931.44, compared with net earnings after provision for Federal taxes but not for price adjustments of \$11,035,022.31 for the corresponding period of last year. Unfilled orders at June 30 were \$1,042,431,000, despite sharply increased deliveries.

Total net sales in the first nine months of 1943 were at a rate 28.4 times as great as 1938 net sales, the letter said.

"In 1938, only five of our divisions and subsidiaries (including export) were making aviation products," Breech said. "In the 1942 fiscal year, there were nine divisions listed in this category, and now there are 12. Five of these—the Illinois, Owosso, Wayne, Magnesium Foundry, and Philadelphia divisions—were organized subsequent to 1938 and in the nine months ended June 30, 1943 had aggregate aviation sales of \$144,440,524."

Kaiser, Elected President, Asks Free Rein at Brewster

Henry J. Kaiser was elected president of Brewster Aeronautical Corp. on October 7, taking over active management of the corporation which is being investigated by two Congressional committees.

Kaiser will retain his position as chairman of the corporation's board. As president, he succeeds Frederick Riebel, Jr., who has planned to return to the Navy Department on a special assignment.

The day prior to Riebel's resignation, Kaiser was reported to have asked the Truman Committee, in executive session, for a free rein to run Brewster and get it on an efficient production basis without delay. Kaiser has outlined to the committee plans to improve conditions in the corporation's Johnsville, Pa., plant, it was learned.

Truman Committeemen have refrained from public disclosures on situations at Brewster, pending a probation period.

But, on the house side of Capitol Hill, the Naval Affairs Committee, fired by press attacks on the Johnsville plant, brushed aside "executive" consideration, and announced that public hearings on the corporation's performance on its Naval contracts would begin October 13.

Naval Affairs' Chairman Vinson (D., Ga.) appointed a subcommittee headed by Rep. Drewry (D., Va.). He declared that "management, labor, and the Navy appear to be jointly responsible for the firm's failure to deliver airplanes in anything like the quantity it should."

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Bull in a China Shop—



AND HOW HE WAS TAMED

Offhand, the thought of putting a delicate radio set in a lunging, thundering war tank is reminiscent of the dainty china and the proverbial bull.

You expect parts and pieces to start flying.

But they don't. And the story of how these sensitive instruments are able to stand war's mauling—jarring shocks, the concussion of artillery fire, electrical interference, tropic heat and Arctic blizzard—is partially the story of Delco Radio's experience in automotive radio. For years, Delco Radio technicians have been tackling and licking the parallel problems that once made automotive radio impossible. And as a result, when war struck, Delco Radio had a head-start on these old foes of "radio in transit."

Refining and extending its manufacturing and testing methods in cooperation with

military technicians, Delco Radio has helped to provide practical radio communication for war vehicles . . . in large quantity and on time. Thanks largely to years of pioneering research during prewar times, the old foes that once wrought havoc with radio reception in motor vehicles have been subdued. Delco Radio Division, General Motors Corporation, Kokomo, Indiana.

Back the Attack— WITH WAR BONDS

Delco Radio
DIVISION OF
GENERAL MOTORS

It's the breath you exhale...



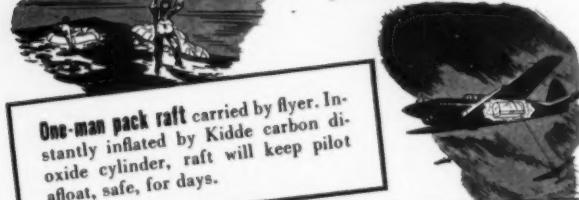
It's the "rise" in bread...

It's the fizz in soda pop...

It's carbon dioxide . . . it's now a new industry!



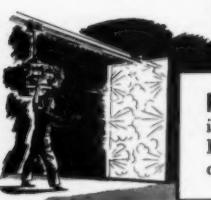
Compressed and stored in cylinders, carbon dioxide is being put to work by Kidde in many fields. It's one of the fastest fire-fighters known. It's a powerhouse of energy quickly available in emergencies. The harnessing of carbon dioxide and other compressed gases forms a new industry, full of promise for the future.



One-man pack raft carried by flyer. Instantly inflated by Kidde carbon dioxide cylinder, raft will keep pilot afloat, safe, for days.



Tracer-bullet-proof gas tank! Kidde makes explosive vapors harmless on fighting planes by filling tank with fire-killing carbon dioxide.



Phantom fire door! Some openings in industrial plants cannot be closed. Kidde curtains them with fire-proof carbon dioxide gas.

Walter Kidde & Company has devoted itself to the science of harnessing gases-under-pressure. War has greatly advanced the scope of this work. New uses are constantly being discovered, which will promote the comfort and safety of the postwar world.



WALTER KIDDE & COMPANY, INC., 1013 MAIN STREET, BELLEVILLE, N. J.

Sheehan Foresees a Heavy Volume of 'Special-Hurry' Air Cargo in Postwar Era

There will be a considerable volume of "special-hurry" air cargo in the postwar era for which speed of delivery rather than cost of transportation will be the primary factor, it is predicted by J. V. Sheehan, former industrial research director of Lockheed Aircraft Corp., Burbank, Calif., in an article in the October issue of the "SAE Journal."

To handle this type of fast cargo, he says, current engineering thought favors large, four-engine planes of 4,000-plus horsepower.

Sheehan envisions big cargo ships flying the long distance routes, two-engine planes on shorter runs, and says that engineers are giving further study to the latent possibilities of three-engine craft.

He summarized the postwar air cargo outlook as follows:

Immediate postwar domestic markets limited by economics to rail express, first class mail and less-than-carload freight in a hurry.

War-expedited research producing larger, more efficient planes which reduce flying costs to the range of these markets.

The largest airplanes which can be built offering the cheapest ton-mile operating costs.

Operation of combination passenger-cargo planes on truck and connecting routes giving way to large, exclusively cargo planes.

Big Testing Laboratory Is Started at Fairchild

A considerable part of its Hagerstown plant has been converted into a laboratory for "physical testing of aircraft materials and for making static tests on structural assemblies," Fairchild Aircraft Division of Fairchild Engine and Airplane Corp. has reported.

M. J. Frank heads this activity. Among its many devices, the laboratory has equipment for reproducing almost any kind of atmosphere from tropical to desert to temperate, company said. There is also a chemical and metallurgical section for element and microscopic analysis. A camera developed by Glenn L. Martin Co., because it can take a picture 5' x 9' if necessary, substitutes photography for hand methods of laying out templates in shop processes.

American Propeller Corp. Continues Developments

Three propeller blade designs instead of one; production of three times as many blades in the last six months as during the previous six months, and employment of women up to 25% of total workers.

This has been the progress of Aviation Corp.'s American Propeller Corp., Toledo, O., since it started a year ago. Company has announced its intention of hiring more women employees "as quickly as possible," since it has found them "to be highly efficient." Additional hollow steel propeller blade designs are being developed.

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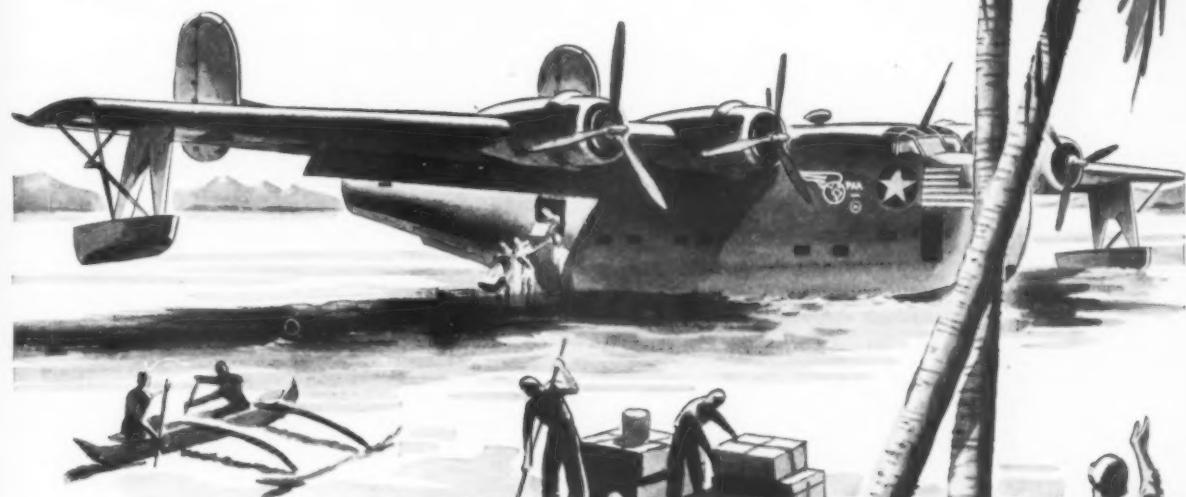
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San Francisco to Salamaua



ROHR equipped Navy Consolidated Coronados flown under contract by Pan American to outposts of attack.

Teamwork...a vital weapon of the United Nations...begins in war production factories and extends to fighting units on every front.

Teams of Rohr Production Fighters work around the clock preparing huge Consolidated Coronados for the next team...skilled flight crews of Pan American World Airways...on a mission of quick supply to far-flung forces of the Allies.

Teamwork is the dominant spirit of men and women on Rohr production lines...determined to help cut the time to Victory!

HELPING TO WRITE THE STORY OF TOMORROW



ROHR
PARTS * ASSEMBLIES

ROHR AIRCRAFT CORPORATION • CHULA VISTA, CALIFORNIA

Colorado Plant Sets Record

OUT IN COLORADO SPRINGS, Colo., more than a thousand miles from the aircraft factories it serves, the plant of Aircraft Mechanics, Inc.—claimed to be the only plant in the U. S. set up exclusively to make aircraft forgings—has carved out a unique production record under conditions which make it one of the minor classics of the industry.

Five years ago Aircraft Mechanics had 33 employees; today it has 1,200 and a



Nicho's

ers, waitresses and others who had never before undertaken skilled work.

Despite these obstacles to volume production, the plant is now turning out forgings for about 40 different planes, is making retracting mechanism for the Budd Manufacturing Co., and making hundreds of motor mountings for the Catalina PBY5, PB2Y3, the Consolidated B-24, Douglas A-20, B-17 and C-54, and the Vega B-17.

An unusual employee-originated worker morale plan has added immeasurably to the success of production.

Spark plug of the firm is Proctor W. Nichols, president and general manager, who engineers the design and conversion of equipment to meet the needs of war production. An engineering graduate of Princeton with 3,000 hours of flying time to his credit, Nichols was chief engineer of the old Alexander Aircraft Co. and designer of its "Flyabout." When Alexander folded up during the depression, Nichols took over part of the plant and was doing aircraft repair and machine shop work when Lend-Lease started. He promptly obtained a contract from Douglas to furnish motor mounts. He adapted an air-forge for aircraft forgings, but other equipment could not be obtained.

He scoured the Colorado mines for machinery which could be converted. Typical of this ingenuity is a ring-rolling machine used in making engine mounts. Nichols couldn't get delivery for five months. Instead of waiting, he located an old street car rail bending machine and converted it to a ring roller. The plant

is now equipped to manufacture dies and forgings and to do all its own engineering and designing.

All personnel has been trained in the plant. Employees are paid 44 cents an hour for the first 30 days, 60 cents the next 30 days, and then classified according to work performed. Officers report excellent relations with the Mile High Aircraft Union in the plant, affiliated with AAM.

At the suggestion of one employee, the "Master Builders Club" was formed. Members are chosen for: quantity and quality production, loyalty to the company and war effort, willingness to cooperate with and instruct new employees, and ability to get along with other employees. Only five hourly workers can be selected each month for membership in the club. The first 20 were chosen by the management-labor committee from secret nominations made by 20 supervisory and 20 general employees. After that the club members themselves made the selections. At monthly meetings members make suggestions concerning efficiency in production practices and devote a session to "boneheads" by supervisors. As each member is chosen the company gives him five silver dollars, a memorial plaque signed by the president and a valuable winged lapel pin. Membership is revoked by the club if standards are lowered. Company officials said this plan has resulted in highly satisfactory labor relations.

In addition to Nichols, other Aircraft Mechanics officials are: E. E. Nichols, vice president; M. A. Ohlander, secretary-treasurer; A. B. Maning, legal counsel; Harry R. Elliott, manager of public relations and personnel; R. B. Douglas, chief draftsman; D. C. Howard, manager of material control and scheduling; G. C. Woodward, purchasing agent; Ira W. Pike and James W. Martin, consulting engineers; J. W. Wilson, chief inspector.



A representative display of forgings, and an engine mount, turned out by Aircraft Mechanics, Inc., is shown above.



The main portion of the plant of Aircraft Mechanics, Inc., Colorado Springs, Colo., is shown above. It claims to be the only plant set up exclusively for aircraft forgings.

Speed Record—By Accident

A P-47 Thunderbolt is believed by Army intelligence officers to have achieved a speed of 840 miles an hour recently when its throttle and controls froze. While escorting Flying Fortresses over Emden, Germany, Second Lieut. Robert H. Knapp of Norwich, N. Y., began a vertical dive at 28,000 feet and had reached 5,000 feet before the plane came out. The instruments on a Thunderbolt will register a speed no greater than 600 miles an hour and some engineers hold that a plane cannot fly faster than the speed of sound (about 735 miles an hour). But intelligence officers in England calculated that Knapp's plane was traveling 840 miles an hour after its 23,000-foot vertical power-dive. They said Knapp had exceeded the record of 780 miles an hour made last spring by a test pilot in another P-47. An inspection of the plane revealed that the paint had been peeled from the ailerons by the terrific wind created.

Substitute for Cargo 'Chutes

Fragile cargo is being jettisoned from Army planes in "pug-nosed" wooden boxes which start rolling on landing, thereby taking up some of the shock, Maj. Roy Lampman, of the Army Air Forces at Wright Field, reveals. Maj. Lampman developed the boxes, which are expected to have great postwar possibilities in aviation express service, with the assistance of the Gerrard Company, Inc., Chicago strapping manufacturers. The boxes have rounded blocks at the ends and are bound with wire strapping by a hand-operated machine developed by the Gerrard company. They cost about \$2.75 each as compared with \$25 to \$30 for a parachute, and can be used many times. Boxes containing delicate medical supplies are now being dropped to troops in action from planes at tree-top levels to avoid anti-aircraft fire. Planes dropping supplies by parachute must fly fairly high to permit parachutes to open, and thus are good targets for the enemy.

Brewster Contracts Adjusted

An adjustment has been made in contracts and production schedules concerning Brewster Aeronautical Corp., the British government, and the U. S. Navy to permit increased output of fighter aircraft, the Navy reports. The adjustment involves an orderly curtailment of the British contract under which Brewster has built several hundred scout bombers. The curtailment has the full approval of the Navy, the report states. The Brewster scout bomber production facilities are to be devoted—after conversion where necessary—to output of the company's other principal product, the F3A Corsair fighter, which Brewster is currently delivering to the Navy.

New Cessna Publication

Cessna Aircraft Co. has published a 34-page brochure entitled *Flying Vistas* "to encourage public acceptance of the personal aircraft in the postwar period as a vehicle for business and pleasure use." The booklet is profusely illustrated with photographs and cartoons in color.

"We will try to convey the joys experienced in private flying, and the new and interesting changes that the personal airplane will bring to the world," says a foreword.



**On DEHAVILLAND MOSQUITOES,
COMPAR keeps hose lines flexible**

RESISTOFLEX hose lines on the famous DeHavilland Mosquito Bomber stay live and flexible . . . are permanently free from internal erosion, gumming or swelling . . . thanks to their inner surface of COMPAR.

In hundreds of hours of service in fighters, bombers and transports, this unique elastic plastic used in all Resistoflex aircraft hose assemblies has convincingly demonstrated its chemical inertness. It is completely impervious to lubricants, hydraulic fluids, gasoline, fuel blends . . . even those having the highest aromatic content. The COMPAR surface is glass-smooth, too, keeping skin friction and turbulence down to a minimum.

Resistoflex hose assemblies offer still other advantages for aircraft applications. They have high resistance to continuous

vibration and flexing, withstand heavy shock loads. They are ounces lighter than other lines of similar construction, yet have much higher mechanical strength.

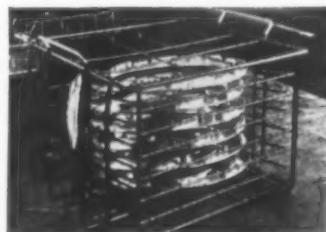
Resistoflex hose assemblies are supplied

in all standard diameters and lengths for instrument and medium pressure hydraulic lines . . . meet applicable Army and Navy specifications. For full details, write for the Resistoflex Aircraft Catalog.

**BASKET COATING PROTECTS
PACKARD PARTS**

Highly polished parts for Rolls-Royce aircraft engines move safely through machining departments at the Packard plant in wire baskets coated with COMPAR — the same elastic plastic that gives Resistoflex hose its unique qualities.

Parts can be degreased right in the baskets, for COMPAR is immune both to oil and to degreasers. Supplied by Resistoflex Corporation in solution form, the coating is easily applied in the user's plant. Write for further information.



RESISTOFLEX

LOW AND MEDIUM PRESSURE INSTRUMENT, HYDRAULIC AND VACUUM HOSE ASSEMBLIES — MANOMETER TUBING, DIPPED AND MOLDED SPECIALTIES.

RESISTOFLEX CORPORATION, BELLEVILLE, NEW JERSEY

MANUFACTURING

'Largest' Plant Has Its Problems

SOME OF the "almost unsurmountable" problems involved in the operation and maintenance of Consolidated Vultee Aircraft Corporation's plant at Fort Worth, Texas, claimed to be the largest aircraft factory in the world, were explained by Frank C. Clayton, plant engineer for the Fort Worth division, in a speech before the North Fort Worth Kiwanis Club last month.

The problems arise largely from the fact that the plant is of "blackout" construction. It was built without windows and every opening for ventilating, exhaust fumes or any other purpose had to be equipped with suitable light traps. All outside lighting on the plant had to be arranged for instantaneous blackout.

Because the plant depends entirely on artificial illumination and ventilation, obviously the amount of electrical services required are far beyond the needs of plants built in the normal way. Not only does the plant have one of the largest fluorescent lighting systems ever installed but it contains the largest industrial air conditioning system in the United States. The only larger air conditioning system is in the Pentagon War Department building in Washington, but because one is an industrial plant and the other an office building, the problems involved in maintenance are hardly comparable.

Clayton told his audience that if the capacity of the air conditioning system was utilized for making artificial ice, 12,000 tons of ice could be produced every

day. Several thousand horsepower of fans and pumps circulate the cool air throughout the plant.

Repair and cleaning of the nearly 60,000 fluorescent lights, most of them mounted 40 feet above the floor in locations which cannot be reached by ladders, provide one of the toughest problems. But Consolidated engineers have solved this one by utilizing the monorail cranes which handle airplane parts and materials. A special "outrigger" structure is bolted directly to one of the monorail crane cabs and from it a maintenance crew can reach the 40-feet-high lighting fixtures. This crew, by special training and organization, cleans as many as 500 lights per night.

Maintenance and operation of the air conditioning system is also a tremendous job. It is kept in operation 24 hours a day, seven days a week for reasons of economy. The maintenance crew works on a 24-hour-shift basis, seven days a week, to keep the system in repair.

Miles of high pressure air pipes with thousands of outlets for riveting machines, etc., and thousands of electrical outlets where electrical hand tools can be plugged in add to the big maintenance job. The maintenance organization, Clayton said, is trained to take care of all emergencies, even to the extent of making parts in order to get the machine in operation. And when a heavy part is needed, the manufacturer is asked to dispatch it by air-express because the



Harry C. Karcher, left, and John Dolza, both of Allison Division, General Motors Corp., Indianapolis, received the 1942 Manly Memorial Award from the Society of Automotive Engineers, October 1, for their technical paper on correlating ground and altitude performance of aircraft engine oiling systems.

cost of sending a heavy part by air is relatively small compared to the loss in operations when an important cog in the assembly line is down.

Westcraft, Inc., Installs Electric Plywood Process

Westcraft Incorporated, Los Angeles, Cal., reports installation of electric tooling in manufacture of plywood assemblies for aircraft which has greatly speeded production. The tooling process developed by the company's engineers glues joints by electricity doing away with the hot room process. C. H. O'Hanlon, president, cited as example of production speed-up one operation which is now completed in 20 minutes when it formerly took four and one-half hours in the hot room.

Westcraft also plans extensive development of its plastics division located in Eagle Rock. The Los Angeles plant houses company's aircraft plywood manufacturing and trailer division. Prior to the war, Westcraft was one of the West coast's leading trailer manufacturers. Associated with O'Hanlon are L. E. Therkelsen, vice president; John A. Iseli, vice president; H. A. Snidow, secretary, and G. T. Hall, treasurer.

70,000 See Piper Film

An estimated 70,000 people have seen the Pennsylvania State College movie entitled "The Construction of a Light Airplane." The picture was taken at the Piper Aircraft Corporation plant in Lock Haven, Pa. and follows in detail the building of a Piper Cub.

Alcoa Plant Expansion

The Aluminum Company of America announces that by the end of this year it will have expanded its forging capacity to 45 times its peace time top. Alcoa also predicts that the war time goal of 2,100,000,000 pounds of lightweight metal production will be surpassed by the aluminum industry soon.

EQUIPPING AMERICA'S FIGHTING AIRCRAFT

HYDRAULIC VALVES

TACHOMETER ADAPTERS

RIGHT ANGLE DRIVES

DE-ICER EQUIPMENT

OTTO

AVIATION CORPORATION

BLOOMFIELD • NEW JERSEY



BUCCANEER AND BERMUDA DIVE BOMBERS • NAVY CORSAIR FIGHTERS

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the

943

WANTED: SALES ENGINEER

West Coast aircraft accessory manufacturer requires the permanent services of an engineer with sales or administrative experience. Training or experience in aviation desirable but not essential. Availability certificate required. Send application and recent photograph to THE SHAW COMPANY, 816 West Fifth Street, Los Angeles 13, California.

B-H

**MANUFACTURERS
of SHEET METAL and
TUBULAR ACCESSORIES**

**TUBULAR
PARTS**

**CONTRACTORS TO ALL LEADING
ENGINE and PROPELLER
MANUFACTURERS**



B-H AIRCRAFT CO.
LONG ISLAND CITY NEW YORK

Harvard Report

(Continued from page 74)

and will also need a substantial amount of working capital to carry on operations.

Appended hereto are two tables which explain the relative financial position of the 11 major airframe manufacturers:

Simplified Composite Balance Sheet—Excluding Government-furnished Assets for 11 Major Airframe Manufacturers: End of 1942

Assets	Liabilities
Cash and Receivables, etc. ¹ .. \$1,202,000,000	Payables (including tax) ² ... \$ 892,000,000
Inventories 502,000,000	U. S. Advances, etc. 674,000,000
Total Current Assets \$1,704,000,000	Total Current Liabilities ... \$1,566,000,000
Miscellaneous Assets 28,000,000	Other Liabilities ³ 3,000,000
Plant and Property (net) ⁴ ... 75,000,000	Stockholders' Capital ⁴ 238,000,000
Total Assets ² \$1,807,000,000	Total Liabilities ² \$1,807,000,000

¹ Also includes a small amount of "Marketable securities" and "Advances to vendors."

² Excluded from "Plant and Property" is \$39,000,000 of plant constructed under Emergency Plant Facilities contracts. These facilities are considered as "Government-owned" for the purposes of this simplified table even though the title nominally remains with the companies until the full cost is reimbursed by the government per contract guarantee. The corresponding "Bank Loans under E.P.F. Contracts," amounting to \$37,000,000, have been eliminated from the liability side of the balance sheet. The remaining \$2,000,000, which is that portion of the Emergency Plant Facilities expenditures financed by corporate funds, is deducted from "Other Liabilities" rather than being added to "Miscellaneous Assets." This was done in order that government-owned property could be added to corporate assets in Table 2 to show "Total Assets Employed" without inflating the total.

³ Includes provisions for taxes and refunds to United States Government in addition to other payables.

⁴ Includes \$47,000,000 "Reserve for postwar and general contingencies" as well as Capital and Surplus.

Simplified Composite Balance Sheet—Including Government-furnished Assets for 11 Major Airframe Manufacturers: End of 1942

Assets	Liabilities
Cash and Receivables, etc. ² .. \$1,202,000,000	Payables (including tax) ² ... \$ 892,000,000
Inventory, Company-owned . 502,000,000	U. S. Advances, etc. 674,000,000
Inventory, Government-owned ⁵ 692,000,000	U. S. Inventory Claims ³ 692,000,000
Total Current Assets \$2,396,000,000	Total Current Liabilities ... \$2,258,000,000
Miscellaneous Assets ⁴ 28,000,000	Other Liabilities ⁴ 3,000,000
Plant and Property: Company-owned Property (net) ⁴ 75,000,000	Stockholders' Capital ⁴ 238,000,000
Government-owned Prop- erty ⁴ 433,000,000	U. S. Claims on Property ... 433,000,000
Total Assets Employed \$2,932,000,000	Total Responsibility \$2,932,000,000

¹ This simplified table is derived from a more detailed composite balance sheet.

Government-furnished assets include plant, property, and productive equipment owned by the Defense Plant Corporation as well as that owned directly by the Army, Navy, or other governmental agencies. They also include government-owned inventories purchased by the companies in behalf of the government under cost-plus-fixed-fee contracts. The total government-owned property shown in this balance sheet does not, however, include the special G.F.E. category ("Government-furnished Equipment") such as aircraft instruments, engines, guns, and other special equipment furnished directly by the government and installed by the contractor. Although the companies have a certain amount of custodianship responsibility for this equipment, they generally do not have any dollar measure of its total value.

² Includes also a small amount of "Marketable securities" and "Advances to vendors."

³ Government-owned inventories are those acquired under cost-plus-fixed-fee contracts (not including "G.F.E." per footnote 1, above).

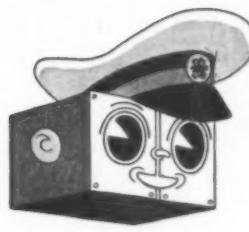
⁴ Excluded from "Company-owned Property" is \$39,000,000 of plant constructed under Emergency Plant Facilities contracts. These facilities are considered as "Government-owned Property" for the purposes of this simplified table even though the title nominally remains with the companies until the full cost is reimbursed by the government per contract guarantee. The corresponding "Bank Loans under E.P.F. Contracts," amounting to \$37,000,000, have accordingly been eliminated from the "Other Liabilities" and included in "U. S. Claims on Property." The remaining \$2,000,000, which is that portion of the E.P.F. expenditures financed by corporate funds has also been handled in this way rather than being added to "Miscellaneous Assets." This was done in order that government-owned property could be added to corporate assets to show "Total Assets Employed" without inflating the total. Company-owned plant has been depreciated on company books by approximately 30%, whereas the newer government-owned plant is shown at cost less only the small depreciation reserve accumulated against the E.P.F. facilities.

⁵ Includes provisions for taxes and refunds due United States Government in addition to other payables.

⁶ Includes \$47,000,000 "Reserve for postwar and general contingencies" as well as Capital and Surplus.

MOBILE REFRIGERATION DIVISION, S. F. Bowser & Co., Inc., announces it has moved its offices and plant to 38-32 54th St., Woodside, Long Island, N. Y.

BABCOCK AIRCRAFT CORP., De Land, Fla., is now controlled by H. M. Krueger, of Shelton, Conn., who has purchased V. C. Babcock's stock, valued at \$30,000.



Song of Elmer... the pilot who never gets tired

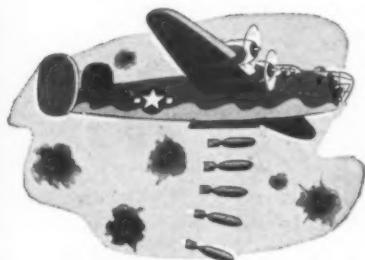
He holds no place in the Officer's Mess
for he does not sleep or eat,
He's the Quietest Birdman ever took
his place in a cockpit seat—
He joins no laughter, nor shoots the breeze,
nor whistles, nor hums, nor sings,
But he's flown more planes than any man
who ever wore pilot's wings...

... has Elmer!



He's an old, old hand, as old hands go
in a young man's game today,
For he circled the globe in 'Thirty-three
with Post in the Winnie Mae—
He's an Army man, he's a Navy man,
and he flies with the R.A.F.,
And the Yankees say, and the British say
of pilots, he's the best...

... is Elmer!



Often when bombers have levelled off
for the last tense bombing runs,

And the bomb-bay doors are opened wide,
and the gunners man the guns,
When the flak comes up as the bombs
go down, and the target zone is clear,
Then who is the pilot who holds the course
set by the bombardier ... ?

It's Elmer!



He can hold a plane on a chosen course
while the crewmen rest or sleep,
He can level off for a landing glide,
or bank her sharp and steep—
He can spiral up, he can spiral down,
or hold her level and true—
His hydraulic muscles never tire
the way human muscles do...

... not Elmer's!



And so bombing, transport, and cargo
planes, take Elmer on every flight
To spare the pilot and rest the crew
for emergency, storm, or fight—

He needs no rest, for he never gets tired,
being only a cold machine,
Just wheels and wires and gears and cogs,
with brackets and stuff between ...

... is Elmer!



He wears no medals, he holds no rank.
Why should he? He cannot feel
The courage that flares in time of need
for he's only alloy and steel!
So when *nerve* is needed, the bombardier,
the pilots, the gunners, too,
The navigator, and all the rest,
are the boys who pull her through...

... NOT Elmer!

SPERRY GYROSCOPE COMPANY, INC.

is proud to be manufacturing the
famous Sperry Gyropilot for the
Armed Forces of the United
Nations.



Brooklyn, N. Y.
Division of Sperry Corporation

• Reprints of this poem — suitable for
framing, with signature removed — may
be obtained without charge by writing
the Sperry Gyroscope Company.

Douglas Employees Observe Nineteenth Anniversary of First World Flight



Hamilton



Whelan

Morgan D. Lalor has been named assistant general sales manager of Reynolds Metals Co. He will make his headquarters at the Richmond, Va., office.

Curtiss-Wright Corp. announces the appointment of **J. I. Hamilton**, veteran propeller division employee, as assistant to R. Elmer Minton, manager of military production for the organization at Caldwell, N. J.

Bernard L. Whelan has been elected general manager of Sikorsky Aircraft Division, United Aircraft Corp., succeeding **J. Reed Miller**, who recently resigned as vice president and general manager.

Barker Grinding Co., Los Angeles, announces that **J. R. Hyatt** of Detroit is head of production control for the company.

Ignatius Barnard, formerly with the War Manpower Commission in Los Angeles, is now directing the industrial relations and personnel department of Compton Metals, Compton, Cal.

Electronic Corp. of America reports that **H. Gregory Shea**, formerly of the Remington Arms Co., has been appointed production manager.

Fleetwings, Division of Kaiser Cargo, Inc., announces that **Russell E. Dill**, chief administrative manager, and **S. D. Hackley**, chief operations manager, have been elected to vice presidencies; **S. H. Wilde** has been appointed assistant to Hackley and **W. G. Stilson** has been named assistant to Dill; **A. A. Schick** is the company's new procurement manager, and **Douglas Albert** has been selected to head up the tooling program on the latest Fleetwings experimental plane; **Thomas G. Edward** has been named head of the experimental department.

Maj. Gen. Walter R. Weaver, recently commanding general of the Army Air Forces Technical Training Command who is to be retired from the service, will serve The Aviation Corp. in a consulting capacity, the company announces.

Sperry Gyroscope Co. announces that **Justin A. Fitz**, associated with the company for the past 26 years, has been appointed advertising director with headquarters in Brooklyn, N. Y.

John E. Schramm, formerly a security analyst for Ward & Co., is now a research assistant in the office of Burdette Wright, vice president in charge of the airplane division of Curtiss-Wright Corp.

MARKING the 19th anniversary of the first round-the-world flight, 20,000 Douglas Aircraft employees along with visiting dignitaries turned out for a brief and historic ceremony Sept. 28.

The World Cruiser "New Orleans," borrowed from its place in the Los Angeles Museum, was displayed beneath one giant wing of the company's 1943 World Cruiser, the C-54.

Col. Erick H. Nelson, pilot of the New Orleans, and Jack Harding, civilian mechanic on the first flight, spoke. Donald Douglas, in a transcribed talk from Wash-

ington, pointed out that in 1924 the "Cruisers" flew the globe in 363 hours in 1943 the C-54 takes 140 hours.

A number of employees who helped build the early planes were guests of honor, including Henry Gurin, manager of the Santa Monica plant; Eric Springer, manager of the El Segundo plant; George Stromple, H. P. Grube, T. B. Coulter, Elmer Hartz and Mrs. Christine St. Clair, first woman employee.

Climaxing the 30-minute program was a "drag-the-field" flight of six A-20's at better than 360 miles per hour.

Buick Hits All-Time High

Buick Motor Division, General Motors Corp., announces that production of Consolidated B-24 Liberator bomber engines is at a new all-time high. More engines will be produced in the fourth 1943 quarter than were manufactured during the whole of 1942 and the total volume for the year will approximately triple the 1942 output, according to an announcement by Harlow H. Curtice, general manager of the Buick division.

Ternstedt in Production

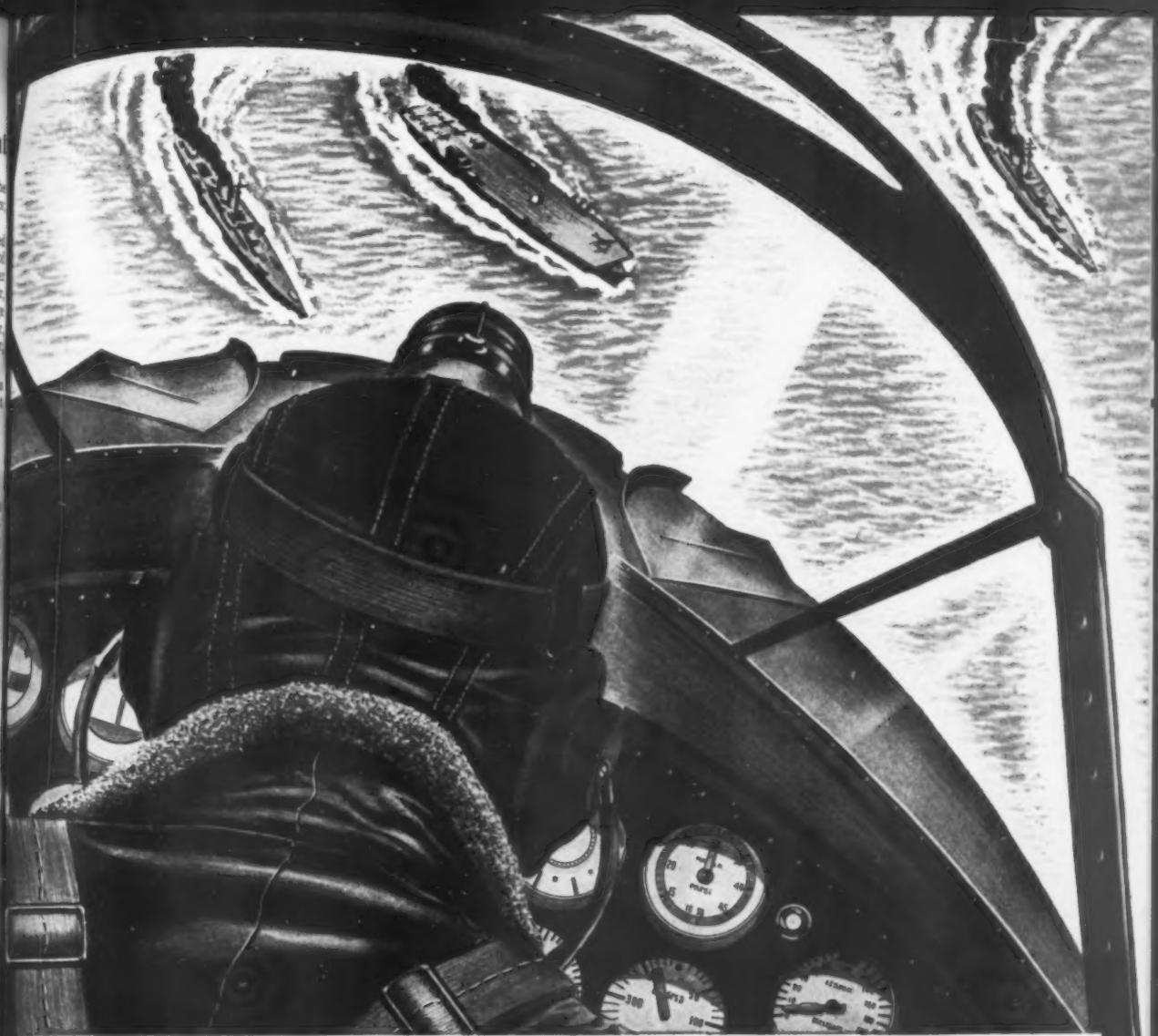
Production of thousands of sensitive aircraft instruments known as remote reading magnetic compass indicators and transmitters has been started for the Army by the Ternstedt Division of Fisher Body, General Motors corporation. Designed and also built by Bendix Aviation Division, the compass indicator and transmitter operates as a single unit and contains a total of 206 parts. The compass transmitter is installed in the plane wing or other points relatively free from magnetic influences and the compass bearing is transmitted electrically to the indicator on the instrument panel in the pilot's compartment.



William E. Douglas (center), father of Donald W. Douglas, president of Douglas Aircraft Co., attended the celebration with Col. Erick H. Nelson (left), who, as a lieutenant in the air corps, piloted the "New Orleans," and Jack Harding, who was civilian mechanic on the flight.



Part of the crowd of more than 20,000 Douglas workers attending the 19th anniversary celebration of the first Round-the-World flight is shown around the "World Cruiser New Orleans," Douglas plane which made the flight, and its "big brother," the C-54, which can girdle the globe in 140 hours.



YOU CAN'T LOOK TWICE

Going 6 miles per minute!

Instant Legibility Assured With ROXALIN Finished Instruments

A small, but vitally important item on most combat equipment, is the instrument dial from which split second readings must be made.

The permanent retention of balanced contrast between small black figures on a non-reflective white background is now possible through the use of Roxalin DIAL WHITE* which overcomes the weakness of conventional materials formerly used for this purpose.

Roxalin DIAL WHITE will not discolor on

aging, is unaffected by sudden temperature changes, and retains its clean white tone even after long exposure to chemical fumes frequently encountered in molded plastic housings.

It is easily applied in production by spraying or roller coating, sets up to handle in lacquer time or may be forced dried if desired.

Write for complete information.

*Another coating of plastic by Roxalin.

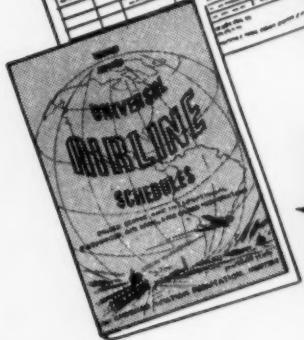
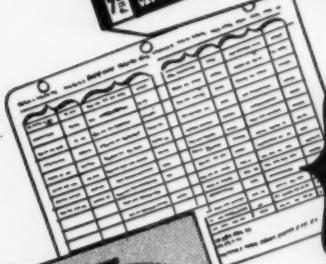
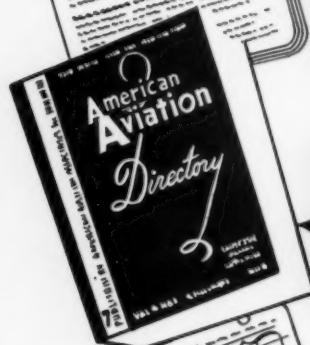
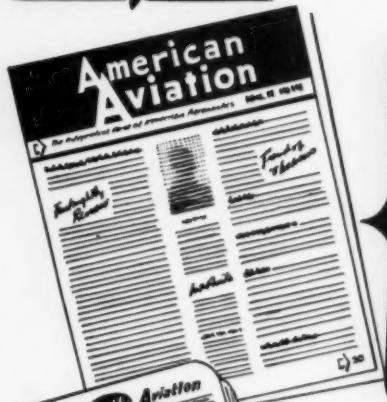
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INCORPORATED
ELIZABETH, N. J., NEW JERSEY

WATCH ROXALIN



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Complete News Coverage of Aviation!



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Published on the 1st and 15th of each month.

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AMERICAN AVIATION DAILY

- Spot news for the industry executive. A daily report airmailed from Washington to the most important industrial audience in the nation.

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AMERICAN AVIATION DIRECTORY

- Buyers guide to aviation management personnel. Published twice a year. Every name and title that count in the industry.

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AMERICAN AVIATION REPORTS

- Monthly financial and statistical reports on airline operations.

AN AMERICAN AVIATION PUBLICATION

UNIVERSAL AIRLINE SCHEDULES

- Reference book for commercial aviation. Complete accurate airline schedules, rates, regulations, etc. Published monthly.

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MANUFACTURING

Manufacturing Digest

ACCURATE MACHINE PRODUCTS COMPANY has been established by J. W. Boeing and W. J. Phelan in Los Angeles to manufacture the I-G-C Countersink Relief Grinding Fixture, used by aircraft and ordnance manufacturers in grinding operations.

BENDIX AVIATION CORPORATION'S New Jersey foundries, which were among the first to perfect the casting of magnesium for the aircraft industry, produced during August a volume of magnesium castings equal to their entire output of all metal castings in 1939, the company announces.

STANDARD OIL COMPANY'S (N. J.) airplane grease, known as M-285, is being produced at the rate of 60,000 pounds per month. Made with a special soap base, the grease is said to keep airplane controls working in both extreme cold and extreme heat.

NASH-KELVINATOR CORPORATION'S Propeller Division is now one of the world's largest producers of airplane propellers. Col. Alfred H. Johnson, supervisor of the Central Procurement District, Army Air Forces, said at recent Army-Navy "E" Award ceremonies at the company's two Lansing, Mich., and one Grand Rapids, Mich., plants. Nash-Kelvinator propellers are now in service on 25 types of American and Allied planes.

FORD MOTOR COMPANY'S Willow Run bomber plant "has not yet reached its peak," said a recent company statement refuting charges of two UAW-CIO officials that the plant is "one of the outstanding failures of this war." The statement said that War Department officials who planned Willow Run "designated a definite time at which the plant should reach its peak, and that time has not yet come."

OWENS-CORNING FIBERGLAS CORPORATION announces that seven basic types of glass fibers are being offered as raw materials for use with other fibers and with plastics and cements, and for use in various types of industrial and chemical process equipment. Experience indicates, the company says, the adaptability of the fibers as reinforcement for certain cements and plaster-like materials where their high tensile strength may give improved physical properties to a product.

E. I. DU PONT DE NEMOURS & COMPANY'S Plastics Department reveals that plastics are giving such superior service on the big war planes that commercial airlines are now planning to make extensive use of them in converting bombers and fighters to peacetime transport planes.

GENERAL ELECTRIC X-RAY CORPORATION announces that for the first time in aviation research, x-ray films have been taken of men theoretically flying at 38,000 feet (seven miles up), in decompression chambers equipped for study at high altitudes. The films, taken in the high-altitude test chamber at Northwestern University, disclosed "marked and significant changes" in the heart, lungs, joints, and muscles of "pilots," providing flight surgeons and research men with new clues in their battle against the hazards of high-level flying.

Aviation Stock Averages

	Week of Sept. 17	Week of Sept. 24
DOW-JONES INDUSTRIAL AVERAGE	139.60	140.21
DOW-JONES RAILROADS	35.07	35.09
5 MAJOR AIRCRAFT MANUFACTURING COS.	28.45	28.97
4 MAJOR TRANSPORT COS.	40.06	37.47
7 LESSER AIRLINES	14.36	13.84
4 LESSER MANUFACTURING COS.	9.31	9.78
20 AVIATION COS.	22.01	21.54

Aviation Securities Over the Counter

	Week Ending Sept. 17	Week Ending Sept. 24
	Bid	Offer
AIRLINES		
All American Aviation	3 1/4	3 1/4
American Export Airlines	33 1/4	33 1/2
Braniff	12 3/4	12 1/2
Chicago & Southern	15 1/4	15 1/2
Continental	8	8 1/2
Delta Air	24	O.W.
Inland	3 1/2	4
Mid Continent	6 1/8	6 1/4
National	14	15
Northeast	7 3/4	7 1/2
Penn-Central, Pfd.	34 1/2	35
MANUFACTURERS		
Aeranca	3 3/8	3 3/4
Aircraft & Diesel	1 3/8	1 3/4
Aircraft Accessories .....	...	3
Airplane & Marine	1 1/8	2 1/8
Airplane Manufacturing & Supply .....	.75	.85
Central Airport	5/8	7/8
Columbia Aircraft	3 1/8	3 1/2
Continental Aviation .....	...	4 1/2
Delaware Aircraft Pfd.	1/4	...
General Aviation Equipment .....	...	1 1/4
Harlow .....	...	.30
Harvill Aircraft, Com.	2 1/4	2 1/4
Harvill Aircraft, Pfd. ....	.60	.65
Interstate Aircraft	5 1/2	6
Jacobs Aircraft	4	4 1/4
Kellett	2 1/2	2 1/4
Kinner Motors .....	.85	.90
Liberty	10 3/4	11
Luscombe	5/8	5/8
Northrop	6 1/8	6 1/2
Piper Aircraft, Pfd.	13 1/2	14 1/2
Piper Aircraft, Com.	5 1/2	5 1/2
Pittsburgh Aviation	8	8
Rohr	5 1/2	5 1/2
Standard Aircraft .....	...	4 1/2
Taylorcraft, Pfd.	4 1/4	5
Taylorcraft, Com.	13 1/2	13 1/2
Timm .....	.60	.60
United Aircraft Products, Pfd.	16 1/2	17 1/2

Largest Research Base in Northwest



The largest aircraft experimental laboratory in the northwest has been built for the Minneapolis-Honeywell Regulator Co. at Minneapolis at the request of the Materiel Division of the Army Air Forces. An exterior view of the lab is shown above over the port engines of a Flying Fortress.



**All Macwhyte aircraft products
are made to conform to
A-N specifications...including:**

"SAFE-LOCK" TERMINALS

...in eye end, turnbuckle end, stud end, and fork end.

AIRCRAFT SLINGS

...custom-built for your work. Both standard wire rope and braided slings available.

TIE-RODS

...for internal and external bracing. Streamline, square, round.



NO. 601R-A



Leading Aviation Stocks

New York Stock Exchange

	Week ending October 2				Week ending October 9			
	Sales	High	Low	Net Change	Sales	High	Low	Net Change
American Airlines	2,200	66	64	+ 1/2	4,400	64 1/2	60 1/2	- 1/2
Aviation Corp.	19,800	4 1/2	3 1/2	- 1/2	28,100	4 1/2	3 1/2	+ 1/2
Bell Aircraft	1,600	13	12 1/2	- 1/2	2,800	13 1/2	12 1/2	+ 1/2
Bendix Aviation	6,300	35 1/2	35	- 1/2	5,300	35 1/2	34 1/2	- 1/2
Boeing Airplane	4,600	10	15 1/2	....	4,400	16 1/2	15 1/2	- 1/2
Consolidated Vultee	5,900	14	13 1/2	- 1/2	7,800	13 1/2	13	- 1/2
Consolidated Vultee pfd	600	22	21 1/2	+ 1/2	1,000	22 1/2	22	....
Curtiss Wright	15,900	7 1/2	7 1/2	+ 1/2	14,800	7 1/2	7	- 1/2
Curtiss Wright A	4,300	18 1/2	18 1/2	....	3,200	10	18 1/2	+ 1/2
Douglas Aircraft	5,300	62 1/2	59 1/2	+ 2	2,500	62	60 1/2	- 2
Eastern Air Lines	2,800	37	36 1/2	+ 1/2	6,800	36 1/2	34 1/2	- 1/2
Ex-Cell-O	400	24	23 1/2	+ 1/2	1,600	24 1/2	23 1/2	....
Grumman Aircraft Eng.	700	12 1/2	12 1/2	....	1,700	13	12 1/2	+ 1/2
Hayes Industries	700	7 1/2	7 1/2	- 1/2	1,100	7 1/2	7 1/2	....
Lockheed Aircraft	6,800	17	16 1/2	- 1/2	8,900	17 1/2	16 1/2	+ 1/2
National Aviation	2,700	11 1/2	11 1/2	- 1/2	3,400	11 1/2	11	....
North American Aviation	5,700	10 1/2	10	+ 1/2	3,200	10 1/2	10	- 1/2
Pan American Airways	19,100	34 1/2	33 1/2	- 1/2	33,200	33 1/2	30 1/2	- 2
Penn Central Airlines	4,200	16 1/2	15 1/2	- 1/2	6,200	16 1/2	14 1/2	- 1/2
Sperry Corp.	4,500	27 1/2	26 1/2	- 1/2	6,600	27	25	- 2
Thompson Products	700	30 1/2	29 1/2	+ 1/2	900	30	29 1/2	- 1/2
Trans & Western Air	1,800	21 1/2	21 1/2	- 1/2	3,700	21 1/2	20 1/2	- 1/2
United Air Lines	9,800	28 1/2	27 1/2	+ 1/2	19,500	27 1/2	25	- 1/2
United Aircraft	6,300	32 1/2	31 1/2	- 1/2	12,100	32 1/2	30 1/2	- 1/2
United Aircraft pfd	400	109 1/2	107 1/2	- 1/2	500	107	106	- 1/2

New York Curb Exchange

	Week ending October 2				Week ending October 9			
	Sales	High	Low	Net Change	Sales	High	Low	Net Change
Aero Supply B	1,300	4 1/2	4	- 1/2	600	4	4	....
Air Associates	1,000	7 3/4	6 1/2	....	300	7 3/4	7 1/2	- 1/2
Aircraft Accessories	4,300	3 1/4	3	....	5,500	3	2 1/2	....
Aro Equipment	1,000	9 1/2	9 1/4	+ 1/2	1,000	9 1/2	8 1/2	- 1/2
Bellanca Aircraft	700	2 1/2	2 1/2	- 1/2	300	2 1/2	2 1/2	....
Breeze Corp.	400	10 1/2	10 1/4	+ 1/2	400	10 1/4	10 1/4	....
Brewster Aero	2,500	3 1/2	3 1/4	- 1/2	18,400	5 1/2	3 1/2	+ 1 1/2
Cessna Aircraft	1,600	7	6 1/2	- 1/2	2,200	6 1/2	6 1/2	- 1/2
Colonial Airlines	1,000	8 1/2	8 1/2	- 1/2	2,400	8 1/2	7 1/2	- 1/2
Republic Aviation	1,400	3 1/4	3 1/4	....	2,800	3 1/4	3 1/4	....
Fairchild Eng. & Airplane	1,300	1 1/2	1 1/2	....	1,600	1 1/2	1 1/2	....
Irvin Air Chute	500	8 1/2	8 1/2	- 1/2	1,200	8 1/2	8 1/2	- 1/2
Fairchild Aviation	300	8 1/2	7 1/2	- 1/2	1,100	7 1/2	7 1/2	- 1/2
Ryan Aero	200	3 1/2	3 1/2	....	1,000	3 1/2	3 1/2	....
Solar Aircraft	500	3 1/4	3	- 1/2	700	3 1/4	3 1/4	....
United Aircraft pfd	500	9 1/2	9 1/2	+ 1/2	700	9 1/2	9	- 1/2
Western Air Lines	800	9 1/2	9 1/2	- 1/2	2,300	9 1/2	8 1/2	- 1/2

Aircraft Computers

Aircraft Computers

NEW!

**Navigational Computer
of pocket size**



COX and STEVENS AIRCRAFT

CORPORATION

Navigational Instruments

P. O. Box 30

Mineola, N.Y.

Similar to our well known model V.W.—this smaller and more compact computer enables a pilot or navigator to quickly and accurately solve dead reckoning navigational problems without mental arithmetic. Model-S—Size 3 1/2" x 9 1/2" x 5/8"—\$35.

WHITE KNOWS TRANSPORTATION FROM THE GROUND UP



White tractor and tank trailer delivering high octane gasoline to the Engine Propeller Research Building at the NACA Aircraft Engine Research Laboratory at Cleveland Airport—where much of tomorrow's progress in aviation is being written today behind closely guarded doors.

The Truck with the *Aviation Future*

Ever since the early days of aviation, White trucks have served the industry in an ever-increasing number of ways. Building and maintaining airports . . . refueling planes hauling mail and cargo . . . and performing a score of other essential services.

The future will find many more ways for trucks to serve aviation's progress. And much of this progress will come from experiments and research now being conducted by the National Advisory Committee for Aeronautics at its Aircraft Engine

Research Laboratory at the Cleveland Airport. A White tractor serves the Engine Propeller Research Unit of the Laboratory, delivering high octane gasoline and special fuel.

White is co-operating with a number of firms in aviation to solve various phases of their ground transportation problems. Write for any information you need. Your inquiry will receive the attention of men who are interested in aviation and who know "transportation from the ground up."



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Weber Nose Skin



These workers at the Weber Showcase Co., Los Angeles, are placing leading edge nose skins on the wing of a CG-4A glider. The skins are formed to contours of the wing by application of high pressure steam and specially designed Weber forming blocks. Note spruce stiffeners inside nose skin in right foreground.

BRIGGS MANUFACTURING COMPANY announces that production of aircraft heat exchangers was about 300% higher in September than it was in April and that a new job, the making of auxiliary airplane gas tanks, which the company has developed entirely during the past four months, is in "high volume" production.



Contractors to the United States Army, Navy and Coast Guard and Aircraft Engine Builders.



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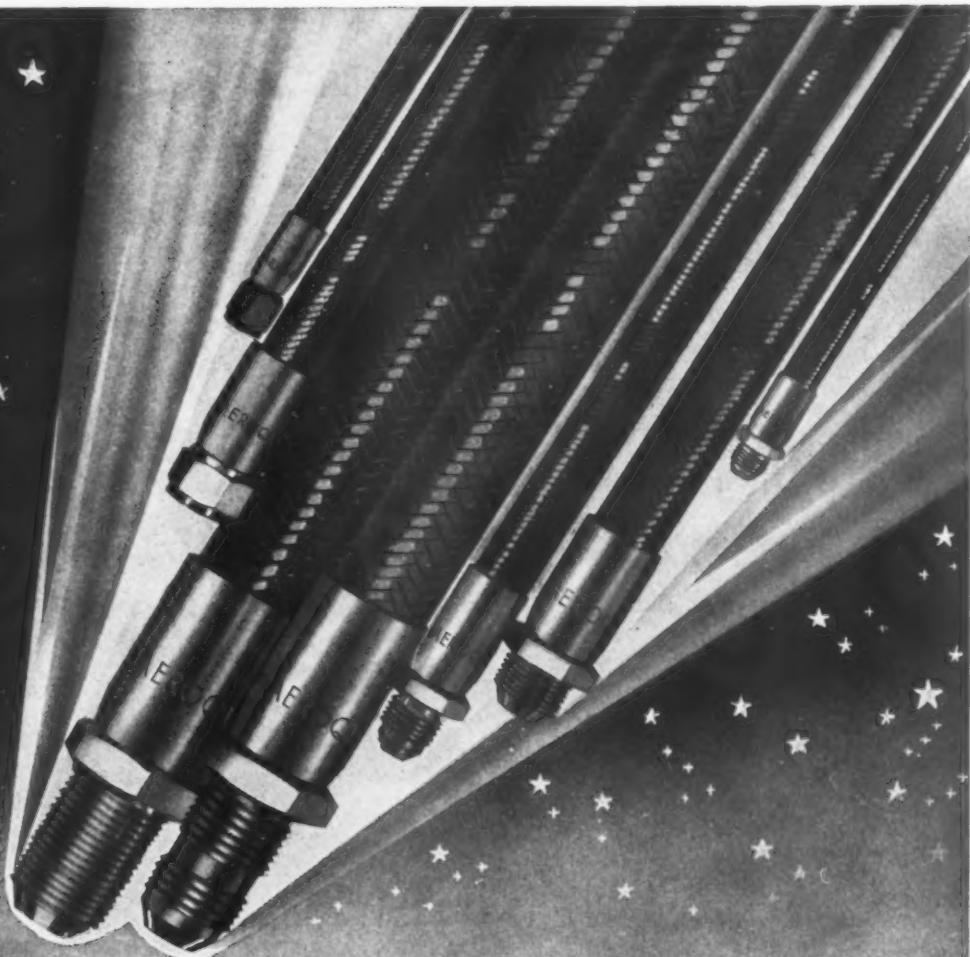
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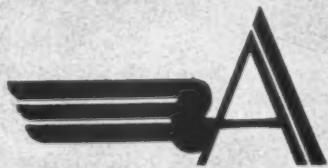
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S*PORTY says:

"ONLY ADEL makes *ADELITE"



Art Cpr. 1943, Walt Disney Productions

S*PORTY visits the ADEL synthetic rubber laboratory and finds out about *ADELITE, the material from which his cowl pad arms and the cushions of his black body is made. For other intimate details on S*PORTY, see last paragraph.

"There's only one genuine *ADELITE," says S*PORTY, "and it's made by ADEL." Designed by aeronautical engineers for aircraft installations, *ADELITE has had years of commercial air line and military combat service testing under every conceivable flight condition from Kiska cold to Munda heat.

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You can get it in stock sheets of various thicknesses or have it molded and cut to standard or special requirements. Use it for tank cushioning, cowl pads wing walks, cat walks and every installation calling for positive insulation against heat, electricity, vibration and sound. ADEL ENGINEERS in eight U.S. and Canadian service offices will give you complete information.

Anatomically speaking, S*PORTY'S head is a 766 clip, his feet are 440 clips and his body is an A800 line support block. 10,000 production types and sizes of ADEL line supports are manufactured under United

States Letter Patent Nos. 2,215,283; 2,227,528; 2,279,865; 2,279,866; 2,288,158; 2,291,887; 2,310,622. Other U.S. and foreign patents pending.

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